

This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Major, Municipal permit. The discharge results from the operation of a 6.5 MGD wastewater treatment plant with additional flow tiers of 8.0, 10.0, and 12.0 MGD. This permit action consists of updating the WQS and updating boilerplate. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq.

1. Facility Name and Mailing Address: Aquia WWTP
P.O. Box 339
Stafford, VA 22555
SIC Code : 4952 WWTP

Facility Location: 75 Coal Landing Road
Stafford, VA 22554
County: Stafford

Facility Contact Name: Robert E. Bos
Telephone Number: (540) 658-8630
2. Permit No.: VA0060968
Expiration Date of previous permit: March 26, 2008
Other VPDES Permits associated with this facility: VAR051425, VAN010023
Other Permits associated with this facility: NA
E2/E3/E4 Status: NA
3. Owner Name: Stafford County
Owner Contact/Title: Harry Critzer, Asst Director of Utilities
Telephone Number: (540) 658-8630
4. Application Complete Date: September 11, 2007
Permit Drafted By: Alison Thompson
Date Drafted: 2/4/08
Draft Permit Reviewed By: Joan Crowther
Date Reviewed: 2/10/08
Public Comment Period Start Date: 7/3/08
End Date: 8/4/08
5. Receiving Waters Information: See Attachment 1 for the Flow Frequency Determination
Receiving Stream Name : Austin Run, UT
Drainage Area at Outfall: <5 sq.mi.
River Mile: 0.06
Stream Basin: Potomac
Subbasin: Potomac
Section: 4a
Stream Class: III
Special Standards: b
Waterbody ID: VAN-A28R
7Q10 Low Flow: 0.0 MGD
7Q10 High Flow: 0.0 MGD
1Q10 Low Flow: 0.0 MGD
1Q10 High Flow: 0.0 MGD
Harmonic Mean Flow: 0.0 MGD
30Q5 Flow: 0.0 MGD
303(d) Listed: No
30Q10 Flow: 0.0 MGD
TMDL Approved: Yes (PCBs)
Date TMDL Approved: September 2007 SWCB
October 2007 EPA
6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

<input checked="" type="checkbox"/> State Water Control Law	<input checked="" type="checkbox"/> EPA Guidelines
<input checked="" type="checkbox"/> Clean Water Act	<input checked="" type="checkbox"/> Water Quality Standards
<input checked="" type="checkbox"/> VPDES Permit Regulation	<input checked="" type="checkbox"/> Other (Potomac Embayment Standards)
<input checked="" type="checkbox"/> EPA NPDES Regulation	
7. Licensed Operator Requirements: Class I
8. Reliability Class: Class I

9. Permit Characterization:

<input type="checkbox"/> Private	<input type="checkbox"/> Effluent Limited	<input checked="" type="checkbox"/> Possible Interstate Effect
<input type="checkbox"/> Federal	<input checked="" type="checkbox"/> Water Quality Limited	<input type="checkbox"/> Compliance Schedule Required
<input type="checkbox"/> State	<input checked="" type="checkbox"/> Toxics Monitoring Program Required	<input type="checkbox"/> Interim Limits in Permit
<input checked="" type="checkbox"/> POTW	<input checked="" type="checkbox"/> Pretreatment Program Required	<input checked="" type="checkbox"/> Interim Limits in Other Document
<input checked="" type="checkbox"/> TMDL		

10. Wastewater Sources and Treatment Description:

This facility is a publicly owned treatment works with a design flow of 6.5 MGD. Flow includes domestic, commercial, and light industrial sources. Influent is screened through one of two mechanically cleaned bar racks and then passes through an aerated grit/grease removal system. Aquia has two Schreiber treatment trains.

Biological treatment occurs using the Schreiber process: flow enters the anoxic zone of the first aeration reactor and mixes with recycled mixed liquor as well as the return activated sludge; the wastewater then enters the oxic zone of the first aeration reactor and finally into the second aeration reactor. Alum is added to the wastewater in a mix tank following the biological treatment. Wastewater then flows into the clarifiers and into the Hydroclear® sand filters and/or the AquaDisk® filters. The filtered water is channeled through ultraviolet disinfection prior to discharge into an unnamed tributary to Austin Run.

Limits are included with this reissuance for additional flow tiers of 8.0, 10.0 and 12.0 MGD. A modification was completed in 2007 to add the 10.0 and 12.0 flow tiers.

See the application for the flow diagram of the treatment works.

All stormwater outfalls for the Aquia WWTP are permitted under the Stormwater Industrial General Permit.

TABLE 1 – Outfall Description

Outfall Number	Discharge Sources	Treatment	Current Design Flow	Outfall Latitude and Longitude
001	Domestic and Commercial wastewater	See Item 10 above.	6.5 MGD	38° 26' 50" N 77° 23' 43" W
See Attachment 2 for (Stafford Quad, DEQ #182B) topographic map.				

11. Sludge Treatment and Disposal Methods:

The facility aerobically digests the waste activated sludge. Digested sludge is stored in a holding tank until it is centrifuged. The dewatered sludge has been approved by DEQ to be used for daily cover at the Rappahannock Regional Solid Waste Landfill in Stafford County.

12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge

TABLE 2 – Items of interest near the discharge	
1AAUA014.51	Virginia DEQ Ambient Water Quality Monitoring Station on Aquia Creek at State Route 641, upstream of the confluence of Austin Run and Aquia Creek.
Public Water Supply	Smith Lake Water Treatment Plant water supply intake at Smith Lake (impoundment of Aquia Creek). Smith Lake is also known as Aquia Reservoir and is upstream of the confluence of Austin Run and Aquia Creek.
VA0083461	Smith Lake Water Treatment Plant minor industrial discharge to a UT of Aquia Creek.
1AAUA007.92	Virginia DEQ Ambient Water Quality Monitoring Station located on Aquia Creek at Aquia Drive. Monitored three times.
VAG846022	Vulcan Materials Stafford Quarry (formerly VA0054895) industrial discharge from three outfalls to Aquia Creek.
1AAUS000.49	Virginia DEQ Ambient Water Quality Monitoring Station located on Austin Run at the end of Aquia Drive, about 0.44 miles downstream of the outfall.
1AAUA003.71	Virginia DEQ Ambient Water Quality Monitoring Station located on Aquia Creek at the Railroad Bridge. (Aquia Creek is tidal at this location.)

13. Material Storage:

TABLE 3 - Material Storage	
Materials Description	Volume Stored
Liquid Alum	10,000 gallons
Magnesium Hydroxide	5,000 gallons
Urea Ice Melt	1,000 pounds
Degreaser	100 gallons
Deodorizer	100 gallons
Calcium Hypochlorite	100 pounds
Filter Cleaner, Isopropyl Alcohol	50 gallons
Diesel Fuel	4,500 gallons
Lubricating Oil	500 gallons
Grease	20 gallons

14. Site Inspection: Performed by DEQ staff on September 11, 2007 (Attachment 3 for summary).

15. Receiving Stream Water Quality and Water Quality Standards:a) Ambient Water Quality Data

The receiving stream is not listed in the current Integrated Report. There are several impairments in downstream assessment unit segments.

VAN-A28R_AUS01A04, which begins at the confluence with an unnamed tributary to Austin Run (streamcode XGQ) and continues downstream until the confluence with Aquia Creek, has a bacteria impairment for fecal coliform. This is not the UT that receives the discharge.

VAN-A28E_AUA01C06 has two impairments; PCB in fish tissue and dissolved oxygen. The PCB in fish tissue impairment is based on a VDH fish consumption advisory. The dissolved oxygen impairment is based on not meeting the monthly dissolved oxygen criteria as established by the Chesapeake Bay Program monitoring and interpolation. An open water assessment of dissolved oxygen values during the summer season between 2002 and 2004 showed that the POTOH was not supporting the aquatic life use. The same two impairments (PCBs in fish tissue and dissolved oxygen) exist in assessment unit segments VAN-A28E_AUA20A02 and VAN-A28E_AUA01A06 for the same reasons as described above. A TMDL for PCBs in the Potomac River was jointly developed with Washington DC and the State of Maryland. Aquia WWTP was given a WLA. Monitoring will be required during this permit cycle for TMDL implementation.

Finally, assessment unit segment VAN-A28E_AUA01B00 has a chloride impairment. The chloride impairment is based on data from station 1AAUA003.71, which is located in transition zone tidal waters. The Water Quality Standards stipulate that the more stringent of either the freshwater or saltwater criteria apply. Therefore, these waters are listed as impaired. However, a TMDL is not necessary as the chloride levels are attributable to the natural estuarine conditions.

Significant portions of the Chesapeake Bay and its tributaries are listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal, and the 2006 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that much of the mainstem Bay does not fully support this use support goal under Virginia's Water Quality Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment.

In response, the Virginia General Assembly amended the State Water Control Law in 2005 to include the *Chesapeake Bay Watershed Nutrient Credit Exchange Program*. This statute set forth total nitrogen and total phosphorus discharge restrictions within the bay watershed. Concurrently, the State Water Control Board adopted new water quality criteria for the Chesapeake Bay and its tidal tributaries. These actions necessitate the evaluation and the inclusion of nitrogen and phosphorus limits on discharges within the bay watershed.

b) Receiving Stream Water Quality Criteria

Part IX of 9 VAC 25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream Austin Run, UT, is located within Section 4a of the Potomac River Basin, and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

Attachment 4 details other water quality criteria applicable to the receiving stream.

Ammonia:

The freshwater, aquatic life Water Quality Criteria for Ammonia are dependent on the instream temperature and pH. The 90th percentile temperature and pH values are used because they best represent the critical design conditions of the receiving stream. For this reissuance, effluent temperature and pH data were used since the critical stream flows are zero for the UT. The pH and temperature values used in the last reissuance have been re-evaluated using the latest effluent data. The results are not significantly different and so pH and temperature values were carried forward. The criteria are summarized in Attachment 4.

Metals Criteria:

The 7Q10 of the receiving stream is zero and no ambient data is available, the effluent data for hardness can be used to determine the metals criteria. The hardness-dependent metals criteria in Attachment 4 are based on an effluent value of 118 mg/L.

Bacteria Criteria: The Virginia Water Quality Standards (9 VAC 25-260-170 B.) states sewage discharges shall be disinfected to achieve the following criteria:

- 1) *E. coli* bacteria per 100 ml of water shall not exceed the following:

	Geometric Mean ¹	Single Sample Maximum
Freshwater <i>E. coli</i> (N/100 ml)	126	235

¹For two or more samples [taken during any calendar month].

c) Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9 VAC 25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Austin Run, UT, is located within Section 4a of the Potomac Basin. This section has been designated with a special standard of b.

Special Standard “b” (Potomac Embayment Standards) established effluent standards for all sewage plants discharging into Potomac River embayments and for expansions of existing plants discharging into non-tidal tributaries of these embayments. 9 VAC 25-415, Policy for the Potomac Embayments controls point source discharges of conventional pollutants into the Virginia embayment waters of the Potomac River, and their tributaries, from the fall line at Chain Bridge in Arlington County to the Route 301 Bridge in King George County. The regulation sets effluent limits for cBOD₅, total suspended solids, phosphorus, and ammonia, to protect the water quality of these high profile waterbodies.

d) Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched for records to determine if there are threatened or endangered species in the vicinity of the discharge. The following threatened or endangered species were identified within a 2 mile radius of the discharge: Bald Eagle. The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and therefore, protect the threatened and endangered species found near the discharge.

The stream that the facility discharges to is within a reach identified as having an Anadromous Fish Use. It is staff's best professional judgment that the proposed limits are protective of this use.

e) Adjacent States' Water Quality Standards

Aquia WWTF discharges to Austin Run, UT, which is a tributary to Aquia Creek and to the Potomac River. The discharge is approximately 7.4 miles from the Maryland State line. Staff reviewed the State of Maryland's Water Quality Standards and believes that the effluent limitations established in this permit will comply with Maryland's water quality standards at the point Aquia Creek enters the Potomac River.

16. Antidegradation (9 VAC 25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream, an unnamed tributary to Austin Run, has been classified as Tier 1 based on the receiving waters having no flow during critical conditions so the stream will reflect the effluent quality, the facility is operating under a Consent Special Order for periodic effluent violations, and there are downstream impairments for bacteria and nutrients. Permit limits proposed have been established by determining wasteload allocations which will result

in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development :

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a) Effluent Screening:

Effluent data obtained from the permit application and DMRs has been reviewed and determined to be suitable for evaluation.

b) Mixing Zones and Wasteload Allocations (WLAs):

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f)(Q_s)] - [(C_s)(f)(Q_s)]}{Q_e}$$

Where:

WLA	=	Wasteload allocation
C _o	=	In-stream water quality criteria
Q _e	=	Design flow
Q _s	=	Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
f	=	Decimal fraction of critical flow
C _s	=	Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10 and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the WQS.

Staff derived wasteload allocations where parameters are reasonably expected to be present in an effluent (e.g., total residual chlorine where chlorine is used as a means of disinfection) and where effluent data indicate the pollutant is present in the discharge above quantifiable levels. With regard to the Outfall 001 discharge, ammonia as N is likely present since this is a WWTP treating sewage, and the application indicates that zinc is present in the discharge. Attachment 4 details the WLA derivations for these pollutants.

c) Effluent Limitations Policy for the Potomac River Embayment (PPRE), Outfall 001

The PPRE includes monthly average effluent limits that apply to all sewage treatment plants:

<u>Parameter</u>	<u>Monthly Average (mg/l)</u>
CBOD ₅	5
Total Suspended Solids	6.0
Total Phosphorus	0.18
NH ₃ (Apr 1 – Oct 31)	1.0

The PPRE states that the “above limitations shall not replace or exclude the discharge from meeting the requirements of the State’s Water Quality Standards (9 VAC 25-260-10 et seq.).”

d) Effluent Limitations Toxic Pollutants, Outfall 001 –

9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9 VAC 25-31-230.D. requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N:

Staff evaluated the last three years of effluent data and has concluded it is not significantly different than what was used to derive the existing ammonia limits. Also, given the fact that the facility is currently under a Consent Special Order due to a plant upset, staff does not believe that the more recent DMR data is indicative of optimum plant performance. Therefore, existing ammonia limitations are proposed to continue in the reissued permit (Attachment 5).

2) Total Residual Chlorine:

Stafford County installed equipment for chlorine disinfection in 2007 because of violations of the *E. coli* limit in the current permit. The equipment will remain in place even though the facility is utilizing UV disinfection again. Since the equipment remains in place, limits shall be placed in this permit in case the chlorine equipment is placed in service. The facility shall be required to notify DEQ-NRO at least 24 hours prior to the chlorine feed beginning operation. Staff calculated WLAs for TRC using current critical flows. In accordance with current DEQ guidance, staff used a default data point of 0.2 mg/L and the calculated WLAs to derive limits. A monthly average of 0.008 mg/L and a weekly average limit of 0.010 mg/L are proposed for this discharge (see Attachment 5).

3) Metals/Organics:

Only zinc was detected in the effluent, but no limits are needed (Attachment 5).

e) Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

pH limitations are set at the water quality criteria.

E. coli limitations are in accordance with the Water Quality Standards 9 VAC25-260-170.

f) Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients

VPDES Regulation 9 VAC 25-31-220(D) requires effluent limitations that are protective of both the numerical and narrative water quality standards for state waters, including the Chesapeake Bay.

As discussed in Section 15a, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries.

The State Water Control Board adopted new Water Quality Criteria for the Chesapeake Bay in March 2005. In addition to the Water Quality Standards, there are three regulations that necessitate nutrient limitations:

9 VAC 25-40 - *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed* requires discharges with design flows of ≥ 0.04 mgd to treat for TN and TP to either BNR levels (TN = 8 mg/l; TP = 1.0 mg/l) or SOA levels (TN = 3.0 mg/l and TP = 0.3 mg/l).

9 VAC 25-720 – *Water Quality Management Plan Regulation* sets forth TN and TP maximum wasteload allocations for facilities with design flows of ≥ 0.5 mgd limiting the mass loading from these discharges. The Aquia WWTP has an allocation in the Potomac River Basin; the allocations are based on a Total Nitrogen concentration of 3.0 mg/L, a Total Phosphorus concentration of 0.18 mg/L, and a design flow of 8.0 MGD.

9 VAC 25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia* was approved by the State Water Control Board on September 6, 2006 and became effective January 1, 2007. This regulation specifies and controls the nitrogen and phosphorus loadings from facilities and specifies facilities that must register under the general permit. Nutrient loadings for those facilities registered under the general permit as well as compliance schedules and other permit requirements, shall be authorized, monitored, limited, and otherwise regulated under the general permit and not this individual permit. The Aquia WWTP has obtained coverage under this General Permit under permit number VAN010023.

Total Nitrogen annual average limits are included in this individual permit since Stafford County committed to a performance of 8.0 mg/L through funding obtained from the Water Quality Improvement Fund (WQIF). Guidance memo 07-2008 Amendment 2 recommends that limits for IPs should take such funding into account; if in the future the facility commits to a lower concentration, DEQ shall initiate a modification to reflect the technology included in the CTC. Monitoring for Nitrates + Nitrites, Total Kjeldahl Nitrogen, and Total Nitrogen are included in this permit. The monitoring is needed to protect the Water Quality Standards of the Chesapeake Bay. Monitoring frequencies are set at the frequencies set forth in 9 VAC 25-820.

No Total Phosphorus annual average limits are included since the facility has monthly average and weekly average concentration limits in place for local water quality.

Loading limits will be governed by the general permit mentioned above.

g) Effluent Limitations and Monitoring Summary.

The effluent limitations are presented in the following table. Limits were established for Flow, cBOD₅, Total Suspended Solids, Ammonia, pH, Total Residual Chlorine, Dissolved Oxygen, Total Phosphorus, and *E. coli*. Monitoring is included for TKN, Nitrate+Nitrite, and Total Nitrogen.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/l), with the flow values (in MGD) and a conversion factor of 3.785.

The mass loading (lb/d) for Total Phosphorus monthly and weekly averages were calculated by multiplying the concentration values (mg/l), with the flow values (in MGD) and a conversion factor of 8.3438.

Ammonia loadings are included for the summer months since the basis for the limit is PPRE and not the toxic water quality criteria.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

Total Phosphorus – The PPRE suggests water quality modeling may be required if staff believes the PPRE limits may not be sufficient to protect the receiving waters. With the expansion to 8.0 MGD, staff believes modeling may be required because of increased loadings of phosphorus. However, because the endpoints by which the impacts from phosphorus loadings may be measured, specifically, chlorophyll-a, are currently being evaluated and are likely to change from what was used in the modeling for Aquia Creek in 1987 (Attachment 6), staff believes a cap on the loading limit is appropriate in lieu of modeling at this time. Considerations of remodeling and impacts can be made if and after the state has adopted criteria for phosphorus in the next few years. Phosphorous loadings for the 8.0, 10.0, and 12.0 MGD tiers will be the same as that for the 6.5 MGD tier. It is staff's best professional judgment that retaining the loading from the 6.5 MGD tier at the higher flows will continue to protect the Water Quality Standards for Aquia Creek. The concentration for TP will remain at 0.18 mg/l as specified in the PPRE.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

18.a. Effluent Limitations/Monitoring Requirements:

Design flow of this facility is 6.5 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the issuance of the CTO for the 8.0 MGD facility, or until the expiration of the permit.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
		Monthly Average		Weekly Average		Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL		NA		NA	NL	Continuous	TIRE
CBOD ₅	5	5 mg/L	120 kg/day	8 mg/L	200 kg/day	NA	NA	1/D	24HC
TSS	5	6.0 mg/L	150 kg/day	9.0 mg/L	220 kg/day	NA	NA	1/D	24HC
Ammonia, as N (mg/L) Apr-Oct	5	1.0 mg/L	25 kg/day	1.5 mg/L	37 kg/day	NA	NA	1/D	24HC
Ammonia, as N (mg/L) Nov-March	3	2.1 mg/L		2.5 mg/L		NA	NA	1/D	24HC
Total Phosphorus (mg/L)	5	0.18 mg/L	10 lb/day	0.27 mg/L	15 lb/day	NA	NA	1/D	24HC
TKN	1	NL mg/L	NA	NA	NA	NA	NA	1/W	24HC
NO ₂ + NO ₃ as Nitrogen	1	NL mg/L	NA	NA	NA	NA	NA	1/W	24 HC
Total Nitrogen – Monthly#	1	NL mg/L	NA	NA	NA	NA	NA	1/W	Calculated
Total Nitrogen – Year to Date	1	NL mg/L	NA	NA	NA	NA	NA	1/M	Calculated
Total Nitrogen Calendar Year	1	8.0 mg/L	NA	NA	NA	NA	NA	1/YR	Calculated
pH	3	NA		NA		6.0 S.U.	9.0 S.U.	1/D	Grab
Dissolved Oxygen	2, 3, 4	NA		NA		6.0 mg/L	NA	1/D	Grab
<i>E. coli</i> (Geometric Mean)	3	126 n/100 mls		NA		NA	NA	1/D	Grab
Total Residual Chlorine (after contact tank)	2, 3, 6	NA		NA		1.0 mg/L	NA	12/D at 2-hr Intervals	Grab
Total Residual Chlorine (after dechlorination)	3	0.008 mg/L		0.010 mg/L		NA	NA	1/D	Grab
Chronic Toxicity – <i>C. dubia</i> (TU _c)		NA		NA		NA	NL	1/YR	24HC
Chronic Toxicity – <i>P. promelas</i> (TU _c)		NA		NA		NA	NL	1/YR	24HC

The basis for the limitations codes are:

- 9VAC25-40, 9VAC25-820
- Best Professional Judgment
- Water Quality Standards
- Stream Model
- Policy for the Potomac River Embayments
- DEQ Disinfection Guidance

Total Nitrogen = Sum of TKN plus NO₂ + NO₃

24H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the Monitored 24-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of twenty-four (24) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum of twenty-four (24) grab samples obtained at hourly or smaller intervals may be collected Where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by ±10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

MGD = Million gallons per day.

NA = Not applicable.

NL = No limit; monitor and report.

S.U. = Standard units.

TIRE = Totalizing, indicating and recording equipment.

1/D = Once every day.

1/W = Once every week.

1/M = Once every month.

1/YR = Once every year.

18.b. Effluent Limitations/Monitoring Requirements:

Design flow of this facility is 8.0 MGD.

Effective Dates: During the period beginning with the issuance of the CTO for the 8 MGD plant and lasting until the CTO for the 10 MGD plant or the expiration date of the permit, whichever comes first.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
		Monthly Average		Weekly Average		Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL		NA		NA	NL	Continuous	TIRE
CBOD ₅	5	5 mg/L	150 kg/day	8 mg/L	240 kg/day	NA	NA	1/D	24HC
TSS	5	6.0 mg/L	180 kg/day	9.0 mg/L	270 kg/day	NA	NA	1/D	24HC
TKN	1	NL mg/L	NA	NA	NA	NA	NA	1/W	24HC
Ammonia, as N (mg/L) Apr-Oct	5	1.0 mg/L	30 kg/day	1.5 mg/L	45 kg/day	NA	NA	1/D	24HC
Ammonia, as N (mg/L) Nov-March	3	2.1 mg/L		2.6 mg/L		NA	NA	1/D	24HC
NO ₂ + NO ₃ as Nitrogen	1	NL mg/L	NA	NA	NA	NA	NA	1/W	24 HC
Total Nitrogen – Monthly#	1	NL mg/L	NA	NA	NA	NA	NA	1/W	Calculated
Total Nitrogen – Year to Date	1	NL mg/L	NA	NA	NA	NA	NA	1/M	Calculated
Total Nitrogen Calendar Year	1	8.0 mg/L	NA	NA	NA	NA	NA	1/YR	Calculated
Total Phosphorus	4, 5*	0.18 mg/L	10 lb/day	0.27 mg/L	15 lb/day	NA	NA	1/D	24HC
pH	3	NA		NA		6.0 S.U.	9.0 S.U.	1/D	Grab
Dissolved Oxygen	2, 3, 4	NA		NA		6.0 mg/L	NA	1/D	Grab
<i>E. coli</i> (Geometric Mean)	3	126 n/100 mls		NA		NA	NA	1/D	Grab
Total Residual Chlorine (after contact tank)	2, 3, 6	NA		NA		1.0 mg/L	NA	12/D at 2-hr Intervals	Grab
Total Residual Chlorine (after dechlorination)	3	0.008 mg/L		0.010 mg/L		NA	NA	1/D	Grab
Chronic Toxicity – <i>C. dubia</i> (TU _c)		NA		NA		NA	NL	1/Y	24HC
Chronic Toxicity – <i>P. promelas</i> (TU _c)		NA		NA		NA	NL	1/Y	24HC

The basis for the limitations codes are:

1. 9VAC25-40, 9VAC25-820

2. Best Professional Judgment

3. Water Quality Standards

4. Stream Model

5. Policy for the Potomac River Embayments

6. DEQ Disinfection Guidance

Total Nitrogen = Sum of TKN plus NO₂ + NO₃

* See Section 17.g.

24H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the Monitored 24-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of twenty-four (24) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum of twenty-four (24) grab samples obtained at hourly or smaller intervals may be collected. Where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by ±10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

MGD = Million gallons per day.

N/A = Not applicable.

NL = No limit; monitor and report.

S.U. = Standard units.

TIRE = Totalizing, indicating and recording equipment.

1/D = Once every day.

1/W = Once every week.

1/M = Once every month.

1/YR = Once every year.

18.c. Effluent Limitations/Monitoring Requirements:

Design flow of this facility is 10.0 MGD.

Effective Dates: During the period beginning with the CTO for the 10 MGD plant and lasting until the issuance of the CTO for the 12.0 MGD facility, or until the expiration of the permit, whichever comes first.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
		Monthly Average		Weekly Average		Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL		NA		NA	NL	Continuous	TIRE
CBOD ₅	5	5 mg/L	190 kg/day	8 mg/L	300 kg/day	NA	NA	1/D	24HC
TSS	5	6.0 mg/L	230 kg/day	9.0 mg/L	340 kg/day	NA	NA	1/D	24HC
TKN	1	NL mg/L	NA	NA	NA	NA	NA	1/W	24HC
Ammonia, as N (mg/L) Apr-Oct	5	1.0 mg/L	38 kg/day	1.5 mg/L	57 kg/day	NA	NA	1/D	24HC
Ammonia, as N (mg/L) Nov-March	3	2.1 mg/L		2.6 mg/L		NA	NA	1/D	24HC
NO ₂ + NO ₃ as Nitrogen	1	NL mg/L	NA	NA	NA	NA	NA	1/W	24 HC
Total Nitrogen – Monthly #	1	NL mg/L	NA	NA	NA	NA	NA	1/W	Calculated
Total Nitrogen – Year to Date	1	NL mg/L	NA	NA	NA	NA	NA	1/M	Calculated
Total Nitrogen Calendar Year	1	3.0 mg/L	NA	NA	NA	NA	NA	1/YR	Calculated
Total Phosphorus	4, 5*	0.18 mg/L	10 lb/day	0.27 mg/L	15 lb/day	NA	NA	1/D	24H-C
pH	3	NA		NA		6.0 S.U.	9.0 S.U.	1/D	Grab
Dissolved Oxygen	2, 3, 4	NA		NA		6.0 mg/L	NA	1/D	Grab
<i>E. coli</i> (Geometric Mean)	3	126 n/100 mls		NA		NA	NA	1/D	Grab
Total Residual Chlorine (after contact tank)	2, 3, 6	NA		NA		1.0 mg/L	NA	12/D at 2-hr Intervals	Grab
Total Residual Chlorine (after dechlorination)	3	0.008 mg/L		0.010 mg/L		NA	NA	1/D	Grab
Chronic Toxicity – <i>C. dubia</i> (TU _c)		NA		NA		NA	NL	1/YR	24HC
Chronic Toxicity – <i>P. promelas</i> (TU _c)		NA		NA		NA	NL	1/YR	24HC

The basis for the limitations codes are:

- 9VAC25-40, 9VAC25-820
- Best Professional Judgment
- Water Quality Standards
- Stream Model
- Policy for the Potomac River Embayments
- DEQ Disinfection Guidance

MGD = Million gallons per day.

NA = Not applicable.

NL = No limit; monitor and report.

S.U. = Standard units.

TIRE = Totalizing, indicating and recording equipment.

1/D = Once every day.

1/W = Once every week.

1/M = Once every month.

1/YR = Once every year.

Total Nitrogen = Sum of TKN plus NO₂ + NO₃.

* See Section 17.g.

24H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the Monitored 24-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of twenty-four (24) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum of twenty-four (24) grab samples obtained at hourly or smaller intervals may be collected Where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by ±10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

18.d. Effluent Limitations/Monitoring Requirements:

Design flow of this facility is 12.0 MGD.

Effective Dates: During the period beginning with the issuance of the CTO for the 12.0 MGD and lasting until the expiration of the permit.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
		Monthly Average		Weekly Average		Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL		NA		NA	NL	Continuous	TIRE
CBOD ₅	5	5 mg/L	230 kg/day	8 mg/L	360 kg/day	NA	NA	1/D	24HC
TSS	5	6.0 mg/L	270 kg/day	9.0 mg/L	410 kg/day	NA	NA	1/D	24HC
TKN	1	NL mg/L	NA	NA	NA	NA	NA	1/W	24HC
Ammonia, as N (mg/L) Apr-Oct	5	1.0 mg/L	45 kg/day	1.5 mg/L	68 kg/day	NA	NA	1/D	24HC
Ammonia, as N (mg/L) Nov-March	3	2.1 mg/L		2.6 mg/L		NA	NA	1/D	24HC
NO ₂ + NO ₃ as Nitrogen	1	NL mg/L	NA	NA	NA	NA	NA	1/W	24HC
Total Nitrogen – Monthly#	1	NL mg/L	NA	NA	NA	NA	NA	1/W	Calculated
Total Nitrogen – Year to Date	1	NL mg/L	NA	NA	NA	NA	NA	1/M	Calculated
Total Nitrogen Calendar Year (mg/L)	1	3.0 mg/L	NA	NA	NA	NA	NA	1/YR	Calculated
Total Phosphorus (mg/L)	4, 5*	0.18 mg/L	10 lb/day	0.27 mg/L	15 lb/day	NA	NA	1/D	24HC
pH	3	NA		NA		6.0 S.U.	9.0 S.U.	1/D	Grab
Dissolved Oxygen	2, 3, 4	NA		NA		6.0 mg/L	NA	1/D	Grab
<i>E. coli</i> (Geometric Mean)	3	126 n/100 mls		NA		NA	NA	1/D	Grab
Total Residual Chlorine (after contact tank)	2, 3, 6	NA		NA		1.0 mg/L	NA	12/D at 2-hr Intervals	Grab
Total Residual Chlorine (after dechlorination)	3	0.008 mg/L		0.01 mg/L		NA	NA	1/D	Grab
Chronic Toxicity – <i>C. dubia</i> (TU _c)		NA		NA		NA	NL	1/YR	24HC
Chronic Toxicity – <i>P. promelas</i> (TU _c)		NA		NA		NA	NL	1/YR	24HC

The basis for the limitations codes are:

- 9VAC25-40, 9VAC25-820
- Best Professional Judgment
- Water Quality Standards
- Stream Model
- Policy for the Potomac River Embayments
- DEQ Disinfection Guidance

MGD = Million gallons per day.

N/A = Not applicable.

NL = No limit; monitor and report.

S.U. = Standard units.

TIRE = Totalizing, indicating and recording equipment.

1/D = Once every day.

1/W = Once every week.

1/M = Once every month.

1/YR = Once every year.

Total Nitrogen = Sum of TKN plus NO₂ + NO₃

* See Section 17.g.

24H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the Monitored 24-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of twenty-four (24) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum of twenty-four (24) grab samples obtained at hourly or smaller intervals may be collected Where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by ±10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

20. Other Permit Requirements :

- a) Part I.B. of the permit contains additional chlorine monitoring requirements, quantification levels and compliance reporting instructions.

A minimum chlorine residual must be maintained at the exit of the chlorine contact tank to assure adequate disinfection. No more than 10% of the monthly test results for TRC at the exit of the chlorine contact tank shall be <1.0 mg/L with any TRC <0.6 mg/L considered a system failure. Monitoring at numerous STPs has concluded that a TRC residual of 1.0 mg/L is an adequate indicator of compliance with the *E. coli* criteria. These requirements shall only be applicable when the chlorine back-up equipment is placed into use. The permit shall require the facility to notify DEQ-NRO at least 24 hours in advance of this equipment coming online.

9 VAC 25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

The calculations for the Nitrogen and Phosphorus parameters shall be in accordance with the calculations set forth in 9 VAC 25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia*. §62.1-44.19:13 of the Code of Virginia defines how annual nutrient loads are to be calculated; this is carried forward in 9 VAC 25-820-70. As annual concentrations (as opposed to loads) are limited in the individual permit, these reporting calculations are intended to reconcile the reporting calculations between the permit programs, as the permittee is collecting a single set of samples for the purpose of ascertaining compliance with two permits.

- b) Permit Section Part I.C., details the requirements for Toxics Management Program.

The VPDES Permit Regulation at 9 VAC 25-31-210 requires monitoring and 9 VAC 25-31-220.I, requires limitations in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. A TMP is imposed for municipal facilities with a design rate >1.0 MGD, with an approved pretreatment program or required to develop a pretreatment program, or those determined by the Board based on effluent variability, compliance history, IWC, and receiving stream characteristics.

This permit proposes to continue the annual monitoring for chronic toxicity using two test species (Attachment 7).

- c) Permit Section Part I.D., details the requirements of a Pretreatment Program.

The VPDES Permit Regulation at 9 VAC 25-31-210 requires monitoring and 9 VAC 25-31-220.D. r The VPDES Permit Regulation at 9 VAC 25-31-730. through 900., and 40 CFR Part 403 requires POTWs with a design flow of >5 MGD and receiving from Industrial Users (IUs) pollutants which pass through or interfere with the operation of the POTW or are otherwise subject to pretreatment standards to develop a pretreatment program.

This treatment works is a POTW with a design capacity of 6.5 MGD, with expansion tiers to 12.0 MGD. Stafford County also owns and operates the Little Falls Run Wastewater Treatment Plant (VA0076392). To One Categorical Industrial Users (CIUs) has been identified as discharging to the Aquia WWTF; the industry is the Quantico Metal Finishing Bluing/Parkerizing Operation at the Quantico Marine Base. Stafford County developed the County's pretreatment program within the Little Falls Run WWTP VPDES permit since two CIUs were identified in the Little Falls Run WWTP survey. The Pretreatment Program was originally approved on January 3, 1996. Program requirements and reporting are found in this section of the permit.

21. Other Special Conditions (Part I.E.):

- a) 95% Capacity Reopener. The VPDES Permit Regulation at 9 VAC 25-31-200.B.2. requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW.
- b) Indirect Dischargers. Required by VPDES Permit Regulation, 9 VAC 25-31-280 B.9 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.
- c) O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190.E. Within 90 days of the effective date of this permit, the permittee shall submit a statement confirming the accuracy and completeness of the current O&M Manual to the Department of Environmental Quality, Northern Regional Office (DEQ-NRO). Future changes to the facility must be addressed by the submittal of a revised O&M Manual within 90 days of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.
- d) CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.
- e) Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9 VAC 25-31-200 D, and Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.) requires licensure of operators. This facility requires a Class I operator.
- f) Reliability Class. The Sewage Collection and Treatment Regulation at 9 VAC 25-790 requires sewerage works achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. The facility is required to meet a reliability Class of I.
- g) Water Quality Criteria Reopener. The VPDES Permit Regulation at 9 VAC 25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.
- h) Sludge Reopener. The VPDES Permit Regulation at 9 VAC 25-31-200.C.4. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.
- i) Sludge Use and Disposal. The VPDES Permit Regulation at 9 VAC 25-31-100.P., 220.B.2., and 420-720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. Technical requirements may be derived from the Virginia Department of Health's Biosolids Use Regulations, 12 VAC 5-585-10 et seq. The facility includes a treatment works treating domestic sewage.
- j) Nutrient Offsets. The Virginia General Assembly, in their 2005 session, enacted a new Article 4.02 (Chesapeake Bay Watershed Nutrient Credit Exchange Program) to the Code of Virginia to address nutrient loads to the Bay. Section 62.1-44.19:15 sets forth the requirements for new and expanded dischargers, which are captured by the requirements of the law, including the requirement that non-point load reductions acquired for the purpose of offsetting nutrient discharges be enforced through the individual VPDES permit.
- k) E3/E4. 9 VAC 25-40-70 B authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal

technologies at the treatment efficiency levels for which they were designed.

- l) Nutrient Reopener. 9 VAC 25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9 VAC 25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.
- m) PCB Monitoring. This special condition shall require the permittee to monitor and report PCB concentrations in dry weather and wet weather effluent samples. The results from this monitoring shall be used to implement the PCB TMDL that was developed for the Potomac River and approved by EPA in October 2007. This facility was given a WLA in the TMDL.

Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

- a) Special Conditions:
 - 1) The Final Effluent Monitoring Alternative Special Condition was removed.
 - 2) The Water Quality Criteria Monitoring Special Condition was removed.
 - 3) The Nutrient Reporting Calculation Special Condition was removed. Calculations are now part of Permit Part I.B.
 - 4) The CTC & CTO Special Condition was added.
 - 5) A special condition requiring the facility to monitor for PCBs was included in this permit.
- b) Monitoring and Effluent Limitations:
 - 1) Temperature monitoring was removed.
 - 2) Total Residual Chlorine limits were added because the facility has installed chlorine disinfection equipment as a back up to the UV system.
 - 3) All concentrations and loadings were rounded to two significant figures.
 - 4) Total Nitrogen reporting was added to the 6.5 MGD flow tier.
 - 5) Total Nitrogen Annual Average concentrations were updated to 3.0 mg/L based on GM 07-2008 Amendment 2 at the 10 and 12 MGD tiers.

24. Variances/Alternate Limits or Conditions:

There are no variances or alternative limits in this permit.

25. Public Notice Information:

First Public Notice Date: 7/3/08

Second Public Notice Date: 7/10/08

Public Notice Information is required by 9 VAC 25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: Northern DEQ Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3834 or (540)899-4532, althompson@deq.virginia.gov. See Attachment 8 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding

the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

26. 303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):

The receiving stream is not on the current impaired waters list, but there are impairments for dissolved oxygen, and chloride in the tidal portions of Aquia Creek. All upstream discharges will be considered for TMDL development.

A TMDL for PCB in fish tissue was jointly developed with Washington DC and the State of Maryland. The PCB in fish tissue impairment is based on a VDH fish consumption advisory. Aquia WWTP was given a WLA in the TMDL. Monitoring shall be required during this permit cycle for TMDL implementation.

TMDL Reopener: This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

27. Additional Comments:

Previous Board Actions: The facility experienced numerous bacteria limit violations when *E. coli* limits were placed in the 2003 VPDES permit. In a 2005 Consent Special Order, interim limits for Fecal Coliform were established in lieu of *E. coli* limits, and the County was required to upgrade the disinfection system to address the limit exceedances. In 2007, the Aquia WWTP had an unanticipated toxic event impair the microorganisms in the Schreiber units which caused multiple effluent violations over a three month period. The Consent Special Order was amended to address these effluent violations. The CSO required the County to investigate possible sources of the toxic event in the collection system. While the facility recovered from the event, temporary chlorination and dechlorination equipment was installed to enhance disinfection. A copy of the CSO is in the permit reissuance file.

Staff Comments: The reissuance of this permit was delayed to allow staff time to develop a PCB monitoring special condition to be included in all the Potomac River facilities that were given a WLA in the approved TMDL for PCBs in the Potomac River.

Public Comment: During the public comment period, the Chesapeake Bay Foundation inquired about the Annual Average Total Nitrogen concentrations at the 10 and 12 MGD flow tiers. CBF asked that an annual average concentration of 3.0 mg/L TN be used instead of 8.0 mg/L at the two higher tiers. DEQ corresponded with DEQ's Chesapeake Bay and WQIF staff and determined that CBF's request was appropriate; therefore, the 3.0 mg/L was placed in the two higher flow tiers. The 8.0 mg/L annual average was left in the 6.5 and 8.0 MGD tiers.

EPA Checklist: The checklist can be found in Attachment 9.

28. Development of the Policy for the Potomac River Embayments (9 VAC 25-415-10)

The following excerpt is modified from the 1997 Fact Sheet for the reissuance of VA0060968. The information is carried forward with this reissuance so the history is maintained as part of the permit file.

The State Water Control Board adopted the Potomac Embayment Standards (PES) in 1971 to address serious nutrient enrichment problems evident in the Virginia embayments and Potomac River at the time. These standards applied to sewage treatment plants discharging into Potomac River embayments in Virginia and for expansions of existing plants discharging into the non-tidal tributaries of these embayments. The standards were actually effluent limitations for BOD, unoxidized nitrogen, total phosphorus, and total nitrogen:

Parameter	PES Standard (monthly average)
BOD ₅	3 mg/l
Unoxidized Nitrogen	1 mg/l (April – October)
Total Phosphorus	0.2 mg/l
Total Nitrogen	8 mg/l (when technology is available)

Based upon these standards, several hundred million dollars were spent during the 1970s and 1980s upgrading major treatment plants in the City of Alexandria and the Counties of Arlington, Fairfax, Prince William, and Stafford. Today, these localities operate advanced wastewater treatment plants, which have contributed a great deal to the dramatic improvement in the water quality of the upper Potomac estuary.

Before the planned upgrades at these facilities were completed, and the fact that water quality improved, questions arose over the high capital and operating costs that would result from meeting all of the requirements contained in the PES. Questions also arose due to the fact that the PES limits were blanket effluent limitations that applied equally to different bodies of water. Therefore, in 1978, the State Water Control Board committed to reevaluate the PES. In 1984, a major milestone was reached when the Virginia Institute of Marine Science (VIMS) completed state-of-the-art models for each of the embayments. The Board then selected the Northern Virginia Planning District Commission (NVPDC) to conduct wasteload allocation studies of the Virginia embayments using the VIMS models. In 1988, these studies were completed and effluent limits that would protect the embayments and the main stem of the Potomac River were developed for each major facility. The studies and all pertinent information are on file in the DEQ Northern Region Office.

Since the PES had not been amended or repealed, VPDES permits had included the PES standards as effluent limits. Since the plants could not meet all of the requirements of the PES, the plant owners operated under consent orders or consent decrees with operating effluent limits for the treatment plants that were agreed upon by the owners and the Board.

In 1991 and 1992, several Northern Virginia jurisdictions with embayment treatment plants submitted a petition to the Board requesting that the Board address the results of the VIMS/NVPDC studies. Their petition requested revised effluent limitations and a defined modeling process for determining effluent limitations.

The recommendations in the petition were designed to protect the extra sensitive nature of the embayments along with the Potomac River that have become a popular recreational resource during recent years. The petition included requirements more stringent than would be applied using the results of the modeling/allocation work conducted in the 1980s. With the inherent uncertainty of modeling, the petitioners question whether the results of modeling would provide sufficient protection for the embayments. By this petition, the local governments asked for continued special protection for the embayments based upon a management approach that uses stringent effluent limits. They believe this approach has proven successful over the past two decades. In addition the petition included a modeling process that will be used to determine if more stringent limits are needed in the future due to increased wastewater discharges.

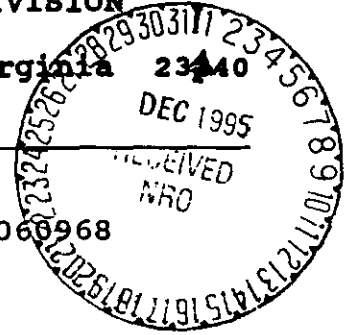
The State Water Control Board adopted the petition, with revisions, as a regulation on September 12, 1996. The regulation is entitled *Policy for the Potomac River Embayments* (9 VAC25-415-10). On the same date, the Board repealed the old PES. The new regulation became effective on April 3, 1997, and contains the following effluent limits:

Parameter	PES Standard (monthly average)
CBOD ₅	5 mg/l
TSS	6 mg/l
Total Phosphorus	0.18 mg/l
Ammonia as Nitrogen	1.0 mg/l

9 VAC 25-415-50 Water Quality Monitoring. The Policy says “that water quality models may be required to predict the effects of wastewater discharges on the water quality of the receiving waterbody, the embayment, and the Potomac River. The purpose of the modeling shall be to determine if more stringent limits than those required by 9 VAC 25-415-40 (the Policy’s effluent limitations) are required to meet water quality standards.”

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
Water Quality Assessments and Planning
629 E. Main Street P.O. Box 10009 Richmond, Virginia 23440



SUBJECT: Flow Frequency Determination
Aquia Wastewater Treatment Facility - VA#0060968

TO: Lyle Anne Collier, NRO

FROM: Paul Herman, WQAP *Paul*

DATE: November 30, 1995

COPIES: Ron Gregory, Charles Martin, File

The Aquia Wastewater Treatment Facility discharges to an unnamed tributary of the Austin Run near Stafford, VA. Stream flow frequencies are required at this site for use by the permit writer in developing effluent limitations for the VPDES permit.

➡ At the discharge point, the receiving stream is shown to be intermittent on the USGS Stafford quadrangle topographic map. The flow frequencies for intermittent streams are 0.0 cfs for the 1Q10, 7Q10, 30Q5, high flow 1Q10, high flow 7Q10, and harmonic mean. The receiving stream is shown to be intermittent all the way to its confluence with Austin Run. Flow frequencies have been determined for Austin Run at the point just upstream of the confluence with the discharge receiving stream.

The VDEQ has operated a continuous record gage on the Aquia Creek near Garrisonville, VA (#01660400) since 1971. The gage is located at the Route 641 bridge in Stafford County, VA. The flow frequencies for the gage and the discharge point are presented below. The values at the discharge point were determined by drainage area proportions and do not address any withdrawals, discharges, or springs lying upstream.

Aquia Creek near Garrisonville, VA (#01660400):

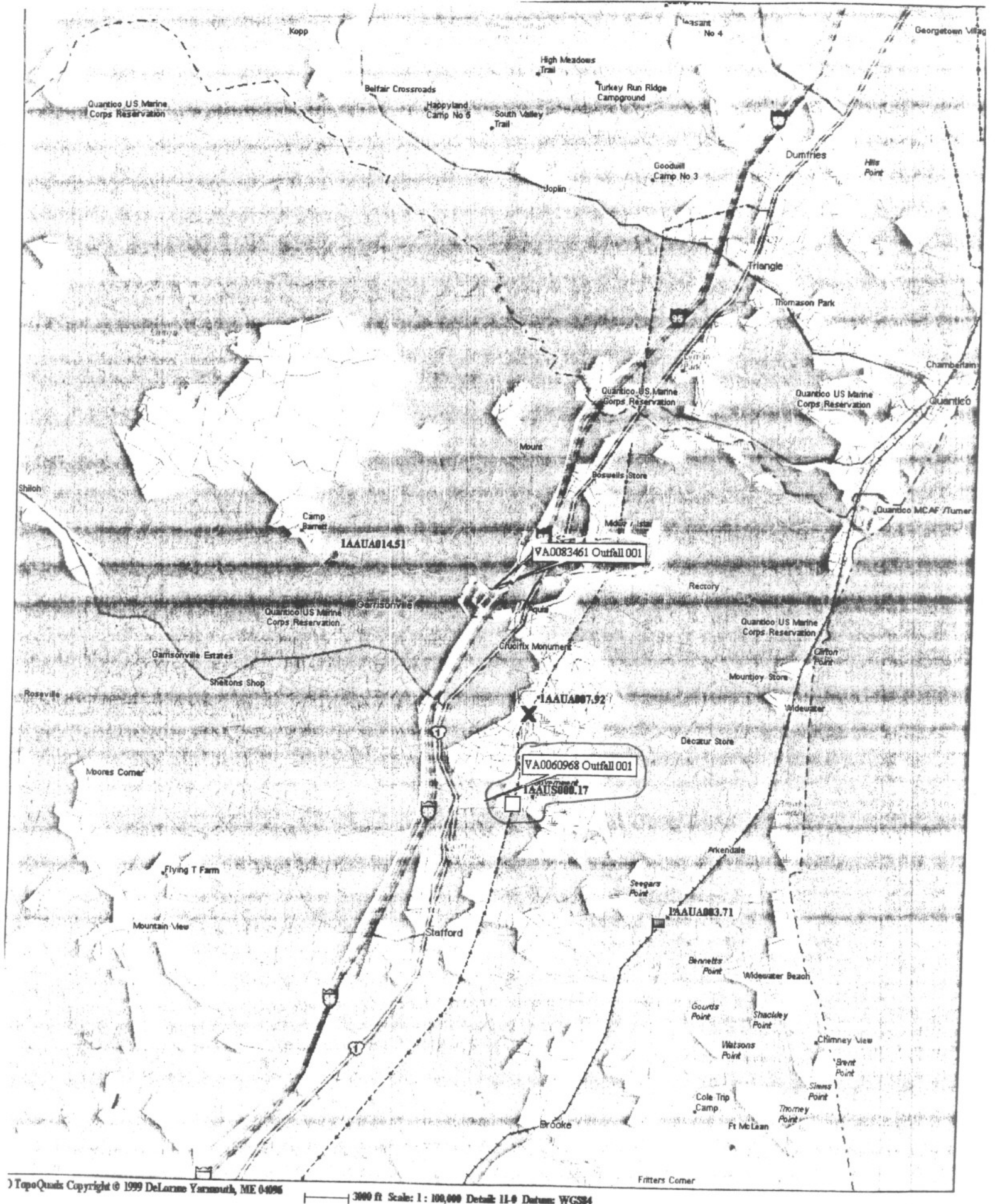
Drainage Area = 34.9 mi ²		
1Q10 = 0.0 cfs	High Flow 1Q10 = 3.9 cfs	
7Q10 = 0.025 cfs	High Flow 7Q10 = 4.8 cfs	
30Q5 = 0.28 cfs	HM = 0.0 cfs	

The high flow months are December through May.

Austin Creek just upstream of intermittent
discharge receiving stream:

Drainage Area = 10.12 mi ²			
1Q10 = 0.0	cfs	High Flow 1Q10 = 1.1	cfs
7Q10 = 0.007	cfs	High Flow 7Q10 = 1.4	cfs
30Q5 = 0.081	cfs	HM = 0.0	cfs

If you have any questions concerning this analysis, please
let me know.



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3000 ft Scale: 1:100,000 Detail: 11-9 Datum: WGS84

Technical Inspection Summary

Comments/Recommendations for action from the previous inspection on March 15, 2006:
(updates in **BOLD** type)

- The plant staff was helpful and knowledgeable. Good housekeeping practices are evident despite the disruptions caused by on-going construction.
- The upgrade construction continues on the other process train. The project was originally due to be completed in June 2006, but some structural damage has been discovered in the tanks. Repair work will probably extend the completion date. **Construction has been completed.**
- The problem with ferric sulfate from the water treatment plant still exists; the plans for a UV system upgrade to a Trojan 3000 + with self cleaning sleeves should help. The facility is currently under a consent order for E. coli. and is reporting fecal coliform until the issue is resolved. **The installation of the new unit is complete; during the 9/11/07 inspection the units were being tested. Chlorine disinfection capabilities are maintained as a backup.**

Comments/Recommendations for action from current inspection on September 11, 2007:

- **Staff should be commended on a well maintained and clean facility. The staff was helpful and prompt when responding to DEQ inquiries during and after the inspection.**
- **Plant continues to replace/upgrade aging equipment.**

UNIT PROCESS: Effluent/Plant Outfall

1. Type Outfall ☒ Shore based ☐ Submerged
2. Type if shore based: ☐ Wingwall ☒ Headwall ☐ Rip Rap
3. Flapper valve: ☐ Yes ☐ No ☒ NA
4. Erosion of bank: ☐ Yes ☒ No ☐ NA
5. Effluent plume visible? ☐ Yes* ☒ No
6. Condition of outfall and supporting structures: ☒ Good ☐ Fair ☐ Poor*
7. Final effluent, evidence of following problems:
 - a. oil sheen ☐ Yes* ☒ No
 - b. grease ☐ Yes* ☒ No
 - c. sludge bar ☐ Yes* ☒ No
 - d. turbid effluent ☐ Yes* ☒ No
 - e. visible foam ☐ Yes* ☒ No
 - f. unusual color ☐ Yes* ☒ No

Comments:

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Aquia WWTP

Permit No.: VA0060968

*April-October pH
PES months*

Receiving Stream: UT, Austin Run

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	mg/L
90% Temperature (Annual) =	deg C
90% Temperature (Wet season) =	deg C
90% Maximum pH =	SU
10% Maximum pH =	SU
Tier Designation (1 or 2) =	1
Public Water Supply (PWS) Y/N? =	n
Trout Present Y/N? =	n
Early Life Stages Present Y/N? =	y

Stream Flows

1Q10 (Annual) =	0 MGD
7Q10 (Annual) =	0 MGD
30Q10 (Annual) =	0 MGD
1Q10 (Wet season) =	0 MGD
30Q10 (Wet season) =	0 MGD
30Q5 =	0 MGD
Harmonic Mean =	0 MGD
Annual Average =	n/a MGD

Mixing Information

Annual - 1Q10 Mix =	100 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	100 %
- 30Q10 Mix =	100 %

Effluent Information

Mean Hardness (as CaCO3) =	118 mg/L
90% Temp (Annual) =	25 deg C
90% Temp (Wet season) =	19 deg C
90% Maximum pH = <i>April-Oct</i>	7.7 SU
10% Maximum pH =	SU
Discharge Flow =	6.5 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	0	--	--	na	2.7E+03	--	--	na	2.7E+03	--	--	--	--	--	--	--	--	--	--	na	2.7E+03
Acrolein	0	--	--	na	7.8E+02	--	--	na	7.8E+02	--	--	--	--	--	--	--	--	--	--	na	7.8E+02
Acrylonitrile ^c	0	--	--	na	6.6E+00	--	--	na	6.6E+00	--	--	--	--	--	--	--	--	--	--	na	6.6E+00
Aldrin ^c	0	3.0E+00	--	na	1.4E-03	3.0E+00	--	na	1.4E-03	--	--	--	--	--	--	--	--	3.0E+00	--	na	1.4E-03
Ammonia-N (mg/l) (Yearly)	0	1.44E+01	1.82E+00	na	--	1.4E+01	1.8E+00	na	--	--	--	--	--	--	--	--	--	1.4E+01	1.8E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	1.44E+01	2.68E+00	na	--	1.4E+01	2.7E+00	na	--	--	--	--	--	--	--	--	--	1.4E+01	2.7E+00	na	--
Anthracene	0	--	--	na	1.1E+05	--	--	na	1.1E+05	--	--	--	--	--	--	--	--	--	--	na	1.1E+05
Antimony	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene ^c	0	--	--	na	7.1E+02	--	--	na	7.1E+02	--	--	--	--	--	--	--	--	--	--	na	7.1E+02
Benzidine ^c	0	--	--	na	5.4E-03	--	--	na	5.4E-03	--	--	--	--	--	--	--	--	--	--	na	5.4E-03
Benzo (a) anthracene ^c	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (b) fluoranthene ^c	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (k) fluoranthene ^c	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (a) pyrene ^c	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Bis(2-Chloroethyl) Ether	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Bis(2-Chloroisopropyl) Ether	0	--	--	na	1.7E+05	--	--	na	1.7E+05	--	--	--	--	--	--	--	--	--	--	na	1.7E+05
Bromoform ^c	0	--	--	na	3.6E+03	--	--	na	3.6E+03	--	--	--	--	--	--	--	--	--	--	na	3.6E+03
Butylbenzylphthalate	0	--	--	na	5.2E+03	--	--	na	5.2E+03	--	--	--	--	--	--	--	--	--	--	na	5.2E+03
Cadmium	0	4.7E+00	1.3E+00	na	--	4.7E+00	1.3E+00	na	--	--	--	--	--	--	--	--	--	4.7E+00	1.3E+00	na	--
Carbon Tetrachloride ^c	0	--	--	na	4.4E+01	--	--	na	4.4E+01	--	--	--	--	--	--	--	--	--	--	na	4.4E+01
Chlordane ^c	0	2.4E+00	4.3E-03	na	2.2E-02	2.4E+00	4.3E-03	na	2.2E-02	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	2.2E-02
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane ^C	0	--	--	na	3.4E+02	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na	3.4E+02
Chloroform ^C	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	4.0E+02	--	--	--	--	--	--	--	--	--	--	na	4.0E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	6.5E+02	8.5E+01	na	--	6.5E+02	8.5E+01	na	--	--	--	--	--	--	--	--	--	6.5E+02	8.5E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Copper	0	1.6E+01	1.0E+01	na	--	1.6E+01	1.0E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.0E+01	na	--
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	2.2E+01	5.2E+00	na	2.2E+05	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	2.2E+05
DDD ^C	0	--	--	na	8.4E-03	--	--	na	8.4E-03	--	--	--	--	--	--	--	--	--	--	na	8.4E-03
DDE ^C	0	--	--	na	5.9E-03	--	--	na	5.9E-03	--	--	--	--	--	--	--	--	--	--	na	5.9E-03
DDT ^C	0	1.1E+00	1.0E-03	na	5.9E-03	1.1E+00	1.0E-03	na	5.9E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	5.9E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Dibenz(a,h)anthracene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Dibutyl phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
Dichloromethane (Methylene Chloride) ^C	0	--	--	na	1.6E+04	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	--	--	na	1.6E+04
1,2-Dichlorobenzene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
1,4-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
3,3-Dichlorobenzidine ^C	0	--	--	na	7.7E-01	--	--	na	7.7E-01	--	--	--	--	--	--	--	--	--	--	na	7.7E-01
Dichlorobromomethane ^C	0	--	--	na	4.6E+02	--	--	na	4.6E+02	--	--	--	--	--	--	--	--	--	--	na	4.6E+02
1,2-Dichloroethane ^C	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
1,1-Dichloroethylene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,2-trans-dichloroethylene	0	--	--	na	1.4E+05	--	--	na	1.4E+05	--	--	--	--	--	--	--	--	--	--	na	1.4E+05
2,4-Dichlorophenol	0	--	--	na	7.9E+02	--	--	na	7.9E+02	--	--	--	--	--	--	--	--	--	--	na	7.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane ^C	0	--	--	na	3.9E+02	--	--	na	3.9E+02	--	--	--	--	--	--	--	--	--	--	na	3.9E+02
1,3-Dichloropropene	0	--	--	na	1.7E+03	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	1.7E+03
Dieldrin ^C	0	2.4E-01	5.6E-02	na	1.4E-03	2.4E-01	5.6E-02	na	1.4E-03	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	1.4E-03
Diethyl Phthalate	0	--	--	na	1.2E+05	--	--	na	1.2E+05	--	--	--	--	--	--	--	--	--	--	na	1.2E+05
Di-2-Ethylhexyl Phthalate ^C	0	--	--	na	5.9E+01	--	--	na	5.9E+01	--	--	--	--	--	--	--	--	--	--	na	5.9E+01
2,4-Dimethylphenol	0	--	--	na	2.3E+03	--	--	na	2.3E+03	--	--	--	--	--	--	--	--	--	--	na	2.3E+03
Dimethyl Phthalate	0	--	--	na	2.9E+06	--	--	na	2.9E+06	--	--	--	--	--	--	--	--	--	--	na	2.9E+06
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
2,4 Dinitrophenol	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.65E+02	--	--	na	7.7E+02	--	--	--	--	--	--	--	--	--	--	na	7.7E+02
2,4-Dinitrotoluene ^C	0	--	--	na	9.1E+01	--	--	na	9.1E+01	--	--	--	--	--	--	--	--	--	--	na	9.1E+01
Dioxin (2,3,7,8- tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	na	na	--	--	--	--	--	--	--	--	--	--	na	na
1,2-Diphenylhydrazine ^C	0	--	--	na	5.4E+00	--	--	na	5.4E+00	--	--	--	--	--	--	--	--	--	--	na	5.4E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	--	--	na	2.4E+02
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	8.6E-02	3.6E-02	na	8.1E-01	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	8.1E-01
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	8.1E-01	--	--	--	--	--	--	--	--	--	--	na	8.1E-01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
Fluorene	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor ^C	0	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	2.1E-03
Heptachlor Epoxide ^C	0	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	1.1E-03
Hexachlorobenzene ^C	0	--	--	na	7.7E-03	--	--	na	7.7E-03	--	--	--	--	--	--	--	--	--	--	na	7.7E-03
Hexachlorobutadiene ^C	0	--	--	na	5.0E+02	--	--	na	5.0E+02	--	--	--	--	--	--	--	--	--	--	na	5.0E+02
Hexachlorocyclohexane Alpha-BHC ^C	0	--	--	na	1.3E-01	--	--	na	1.3E-01	--	--	--	--	--	--	--	--	--	--	na	1.3E-01
Hexachlorocyclohexane Beta-BHC ^C	0	--	--	na	4.6E-01	--	--	na	4.6E-01	--	--	--	--	--	--	--	--	--	--	na	4.6E-01
Hexachlorocyclohexane Gamma-BHC ^C (Lindane)	0	9.5E-01	na	na	6.3E-01	9.5E-01	--	na	6.3E-01	--	--	--	--	--	--	--	--	9.5E-01	--	na	6.3E-01
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
Hexachloroethane ^C	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone ^C	0	--	--	na	2.6E+04	--	--	na	2.6E+04	--	--	--	--	--	--	--	--	--	--	na	2.6E+04
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	1.5E+02	1.7E+01	na	--	1.5E+02	1.7E+01	na	--	--	--	--	--	--	--	--	--	1.5E+02	1.7E+01	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	7.7E-01	na	5.1E-02	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	na	5.1E-02
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04
Nickel	0	2.1E+02	2.3E+01	na	4.6E+03	2.1E+02	2.3E+01	na	4.6E+03	--	--	--	--	--	--	--	--	2.1E+02	2.3E+01	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
N-Nitrosodimethylamine ^C	0	--	--	na	8.1E+01	--	--	na	8.1E+01	--	--	--	--	--	--	--	--	--	--	na	8.1E+01
N-Nitrosodiphenylamine ^C	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
N-Nitrosodi-n-propylamine ^C	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB-1016	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1221	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1232	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1242	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1248	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1254	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1260	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB Total ^C	0	--	--	na	1.7E-03	--	--	na	1.7E-03	--	--	--	--	--	--	--	--	--	--	na	1.7E-03

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Pentachlorophenol ^C	0	7.7E-03	5.9E-03	na	8.2E+01	7.7E-03	5.9E-03	na	8.2E+01	--	--	--	--	--	--	--	--	7.7E-03	5.9E-03	na	8.2E+01
Phenol	0	--	--	na	4.6E+06	--	--	na	4.6E+06	--	--	--	--	--	--	--	--	--	--	na	4.6E+06
Pyrene	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity Beta and Photon Activity (mrem/yr)	0	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	--	--	--	--	--	--	--	--	na	1.5E+01
Strontium-90	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	--	--	na	4.0E+00
Tritium	0	--	--	na	8.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	--	--	--	na	8.0E+00
Selenium	0	--	--	na	2.0E+04	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	--	--	na	2.0E+04
Silver	0	2.0E+01	5.0E+00	na	1.1E+04	2.0E+01	5.0E+00	na	1.1E+04	--	--	--	--	--	--	--	--	2.0E+01	5.0E+00	na	1.1E+04
Sulfate	0	4.6E+00	--	na	--	4.6E+00	--	na	--	--	--	--	--	--	--	--	--	4.6E+00	--	na	--
1,1,2,2-Tetrachloroethane ^C	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Tetrachloroethylene ^C	0	--	--	na	1.1E+02	--	--	na	1.1E+02	--	--	--	--	--	--	--	--	--	--	na	1.1E+02
Thallium	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Toluene	0	--	--	na	6.3E+00	--	--	na	6.3E+00	--	--	--	--	--	--	--	--	--	--	na	6.3E+00
Total dissolved solids	0	--	--	na	2.0E+05	--	--	na	2.0E+05	--	--	--	--	--	--	--	--	--	--	na	2.0E+05
Toxaphene ^C	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Tributyltin	0	7.3E-01	2.0E-04	na	--	7.3E-01	2.0E-04	na	--	--	--	--	--	--	--	--	--	7.3E-01	2.0E-04	na	--
1,2,4-Trichlorobenzene	0	4.6E-01	6.3E-02	na	7.5E-03	4.6E-01	6.3E-02	na	7.5E-03	--	--	--	--	--	--	--	--	4.6E-01	6.3E-02	na	--
1,1,2-Trichloroethane ^C	0	--	--	na	9.4E+02	--	--	na	9.4E+02	--	--	--	--	--	--	--	--	--	--	na	9.4E+02
Trichloroethylene ^C	0	--	--	na	4.2E+02	--	--	na	4.2E+02	--	--	--	--	--	--	--	--	--	--	na	4.2E+02
2,4,6-Trichlorophenol ^C	0	--	--	na	8.1E+02	--	--	na	8.1E+02	--	--	--	--	--	--	--	--	--	--	na	8.1E+02
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	6.5E+01	--	--	na	6.5E+01	--	--	--	--	--	--	--	--	--	--	na	6.5E+01
Vinyl Chloride ^C	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Zinc	0	--	--	na	6.1E+01	--	--	na	6.1E+01	--	--	--	--	--	--	--	--	--	--	na	6.1E+01
	0	1.3E+02	1.4E+02	na	6.9E+04	1.3E+02	1.4E+02	na	6.9E+04	--	--	--	--	--	--	--	--	1.3E+02	1.4E+02	na	6.9E+04

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	4.3E+03
Arsenic	9.0E+01
Barium	na
Cadmium	7.8E-01
Chromium III	5.1E+01
Chromium VI	6.4E+00
Copper	6.2E+00
Iron	na
Lead	1.0E+01
Manganese	na
Mercury	5.1E-02
Nickel	1.4E+01
Selenium	3.0E+00
Silver	1.8E+00
Zinc	5.4E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Aquia WWTP

Permit No.: VA0060968

November - March pH

Receiving Stream: UT, Austin Run

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO ₃) =	mg/L
90% Temperature (Annual) =	deg C
90% Temperature (Wet season) =	deg C
90% Maximum pH =	SU
10% Maximum pH =	SU
Tier Designation (1 or 2) =	1
Public Water Supply (PWS) Y/N? =	n
Trout Present Y/N? =	n
Early Life Stages Present Y/N? =	y

Stream Flows

1Q10 (Annual) =	0 MGD
7Q10 (Annual) =	0 MGD
30Q10 (Annual) =	0 MGD
1Q10 (Wet season) =	0 MGD
30Q10 (Wet season) =	0 MGD
30Q5 =	0 MGD
Harmonic Mean =	0 MGD
Annual Average =	n/a MGD

Mixing Information

Annual - 1Q10 Mix =	100 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	100 %
- 30Q10 Mix =	100 %

Effluent Information

Mean Hardness (as CaCO ₃) =	118 mg/L
90% Temp (Annual) =	25 deg C
90% Temp (Wet season) =	19 deg C
90% Maximum pH =	Nov - March 7.4 SU
10% Maximum pH =	SU
Discharge Flow =	6.5 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	0	--	--	na	2.7E+03	--	--	na	2.7E+03	--	--	--	--	--	--	--	--	--	--	na	2.7E+03
Acrolein	0	--	--	na	7.8E+02	--	--	na	7.8E+02	--	--	--	--	--	--	--	--	--	--	na	7.8E+02
Acrylonitrile ^C	0	--	--	na	6.6E+00	--	--	na	6.6E+00	--	--	--	--	--	--	--	--	--	--	na	6.6E+00
Aldrin ^C	0	3.0E+00	--	na	1.4E-03	3.0E+00	--	na	1.4E-03	--	--	--	--	--	--	--	--	3.0E+00	--	na	1.4E-03
Ammonia-N (mg/l) (Yearly)	0	2.30E+01	2.41E+00	na	--	2.3E+01	2.4E+00	na	--	--	--	--	--	--	--	--	--	2.3E+01	2.4E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	2.30E+01	3.55E+00	na	--	2.3E+01	3.5E+00	na	--	--	--	--	--	--	--	--	--	2.3E+01	3.5E+00	na	--
Anthracene	0	--	--	na	1.1E+05	--	--	na	1.1E+05	--	--	--	--	--	--	--	--	--	--	na	1.1E+05
Antimony	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene ^C	0	--	--	na	7.1E+02	--	--	na	7.1E+02	--	--	--	--	--	--	--	--	--	--	na	7.1E+02
Benzidine ^C	0	--	--	na	5.4E-03	--	--	na	5.4E-03	--	--	--	--	--	--	--	--	--	--	na	5.4E-03
Benzo (a) anthracene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (b) fluoranthene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (k) fluoranthene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (a) pyrene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Bis2-Chloroethyl Ether	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Bis2-Chloroisopropyl Ether	0	--	--	na	1.7E+05	--	--	na	1.7E+05	--	--	--	--	--	--	--	--	--	--	na	1.7E+05
Bromoform ^C	0	--	--	na	3.6E+03	--	--	na	3.6E+03	--	--	--	--	--	--	--	--	--	--	na	3.6E+03
Butylbenzylphthalate	0	--	--	na	5.2E+03	--	--	na	5.2E+03	--	--	--	--	--	--	--	--	--	--	na	5.2E+03
Cadmium	0	4.7E+00	1.3E+00	na	--	4.7E+00	1.3E+00	na	--	--	--	--	--	--	--	--	--	4.7E+00	1.3E+00	na	--
Carbon Tetrachloride ^C	0	--	--	na	4.4E+01	--	--	na	4.4E+01	--	--	--	--	--	--	--	--	--	--	na	4.4E+01
Chlordane ^C	0	2.4E+00	4.3E-03	na	2.2E-02	2.4E+00	4.3E-03	na	2.2E-02	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	2.2E-02
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane ^C	0	--	--	na	3.4E+02	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na	3.4E+02
Chloroform ^C	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	4.0E+02	--	--	--	--	--	--	--	--	--	--	na	4.0E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	6.5E+02	8.5E+01	na	--	6.5E+02	8.5E+01	na	--	--	--	--	--	--	--	--	--	6.5E+02	8.5E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Copper	0	1.6E+01	1.0E+01	na	--	1.6E+01	1.0E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.0E+01	na	--
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	2.2E+01	5.2E+00	na	2.2E+05	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	2.2E+05
DOD ^C	0	--	--	na	8.4E-03	--	--	na	8.4E-03	--	--	--	--	--	--	--	--	--	--	na	8.4E-03
DDE ^C	0	--	--	na	5.9E-03	--	--	na	5.9E-03	--	--	--	--	--	--	--	--	--	--	na	5.9E-03
DDT ^C	0	1.1E+00	1.0E-03	na	5.9E-03	1.1E+00	1.0E-03	na	5.9E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	5.9E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Dibenz(a,h)anthracene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Dibutyl phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
Dichloromethane (Methylene Chloride) ^C	0	--	--	na	1.6E+04	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	--	--	na	1.6E+04
1,2-Dichlorobenzene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
1,4-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
3,3-Dichlorobenzidine ^C	0	--	--	na	7.7E-01	--	--	na	7.7E-01	--	--	--	--	--	--	--	--	--	--	na	7.7E-01
Dichlorobromomethane ^C	0	--	--	na	4.6E+02	--	--	na	4.6E+02	--	--	--	--	--	--	--	--	--	--	na	4.6E+02
1,2-Dichloroethane ^C	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
1,1-Dichloroethylene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,2-trans-dichloroethylene	0	--	--	na	1.4E+05	--	--	na	1.4E+05	--	--	--	--	--	--	--	--	--	--	na	1.4E+05
2,4-Dichlorophenol	0	--	--	na	7.9E+02	--	--	na	7.9E+02	--	--	--	--	--	--	--	--	--	--	na	7.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane ^C	0	--	--	na	3.9E+02	--	--	na	3.9E+02	--	--	--	--	--	--	--	--	--	--	na	3.9E+02
1,3-Dichloropropene	0	--	--	na	1.7E+03	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	1.7E+03
Dieldrin ^C	0	2.4E-01	5.6E-02	na	1.4E-03	2.4E-01	5.6E-02	na	1.4E-03	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	1.4E-03
Diethyl Phthalate	0	--	--	na	1.2E+05	--	--	na	1.2E+05	--	--	--	--	--	--	--	--	--	--	na	1.2E+05
Di-2-Ethylhexyl Phthalate ^C	0	--	--	na	5.9E+01	--	--	na	5.9E+01	--	--	--	--	--	--	--	--	--	--	na	5.9E+01
2,4-Dimethylphenol	0	--	--	na	2.3E+03	--	--	na	2.3E+03	--	--	--	--	--	--	--	--	--	--	na	2.3E+03
Dimethyl Phthalate	0	--	--	na	2.9E+06	--	--	na	2.9E+06	--	--	--	--	--	--	--	--	--	--	na	2.9E+06
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
2,4 Dinitrophenol	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.65E+02	--	--	na	7.7E+02	--	--	--	--	--	--	--	--	--	--	na	7.7E+02
2,4-Dinitrotoluene ^C	0	--	--	na	9.1E+01	--	--	na	9.1E+01	--	--	--	--	--	--	--	--	--	--	na	9.1E+01
Dioxin (2,3,7,8- tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	na	na	--	--	--	--	--	--	--	--	--	--	na	na
1,2-Diphenylhydrazine ^C	0	--	--	na	5.4E+00	--	--	na	5.4E+00	--	--	--	--	--	--	--	--	--	--	na	5.4E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	--	--	na	2.4E+02
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	8.6E-02	3.6E-02	na	8.1E-01	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	8.1E-01
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	8.1E-01	--	--	--	--	--	--	--	--	--	--	na	8.1E-01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
Fluorene	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor ^c	0	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	2.1E-03
Heptachlor Epoxide ^c	0	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	1.1E-03
Hexachlorobenzene ^c	0	--	--	na	7.7E-03	--	--	na	7.7E-03	--	--	--	--	--	--	--	--	--	--	na	7.7E-03
Hexachlorobutadiene ^c	0	--	--	na	5.0E+02	--	--	na	5.0E+02	--	--	--	--	--	--	--	--	--	--	na	5.0E+02
Hexachlorocyclohexane																					
Alpha-BHC ^c	0	--	--	na	1.3E-01	--	--	na	1.3E-01	--	--	--	--	--	--	--	--	--	--	na	1.3E-01
Hexachlorocyclohexane																					
Beta-BHC ^c	0	--	--	na	4.6E-01	--	--	na	4.6E-01	--	--	--	--	--	--	--	--	--	--	na	4.6E-01
Hexachlorocyclohexane																					
Gamma-BHC ^c (Lindane)	0	9.5E-01	na	na	6.3E-01	9.5E-01	--	na	6.3E-01	--	--	--	--	--	--	--	--	9.5E-01	--	na	6.3E-01
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
Hexachloroethane ^c	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene ^c	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone ^c	0	--	--	na	2.6E+04	--	--	na	2.6E+04	--	--	--	--	--	--	--	--	--	--	na	2.6E+04
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	1.5E+02	1.7E+01	na	--	1.5E+02	1.7E+01	na	--	--	--	--	--	--	--	--	--	1.5E+02	1.7E+01	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	7.7E-01	na	5.1E-02	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	na	5.1E-02
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04
Nickel	0	2.1E+02	2.3E+01	na	4.6E+03	2.1E+02	2.3E+01	na	4.6E+03	--	--	--	--	--	--	--	--	2.1E+02	2.3E+01	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
N-Nitrosodimethylamine ^c	0	--	--	na	8.1E+01	--	--	na	8.1E+01	--	--	--	--	--	--	--	--	--	--	na	8.1E+01
N-Nitrosodiphenylamine ^c	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
N-Nitrosodi-n-propylamine ^c	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB-1016	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1221	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1232	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1242	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1248	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1254	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1260	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB Total ^c	0	--	--	na	1.7E-03	--	--	na	1.7E-03	--	--	--	--	--	--	--	--	--	--	na	1.7E-03

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Pentachlorophenol ^C	0	7.7E-03	5.9E-03	na	8.2E+01	7.7E-03	5.9E-03	na	8.2E+01	--	--	--	--	--	--	--	--	7.7E-03	5.9E-03	na	8.2E+01
Phenol	0	--	--	na	4.6E+06	--	--	na	4.6E+06	--	--	--	--	--	--	--	--	--	--	na	4.6E+06
Pyrene	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity Beta and Photon Activity (mrem/yr)	0	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	--	--	--	--	--	--	--	--	na	1.5E+01
Strontium-90	0	--	--	na	8.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	--	--	--	na	8.0E+00
Tritium	0	--	--	na	2.0E+04	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	--	--	na	2.0E+04
Selenium	0	2.0E+01	5.0E+00	na	1.1E+04	2.0E+01	5.0E+00	na	1.1E+04	--	--	--	--	--	--	--	--	2.0E+01	5.0E+00	na	1.1E+04
Silver	0	4.6E+00	--	na	--	4.6E+00	--	na	--	--	--	--	--	--	--	--	--	4.6E+00	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,1,2,2-Tetrachloroethane ^C	0	--	--	na	1.1E+02	--	--	na	1.1E+02	--	--	--	--	--	--	--	--	--	--	na	1.1E+02
Tetrachloroethylene ^C	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Thallium	0	--	--	na	6.3E+00	--	--	na	6.3E+00	--	--	--	--	--	--	--	--	--	--	na	6.3E+00
Toluene	0	--	--	na	2.0E+05	--	--	na	2.0E+05	--	--	--	--	--	--	--	--	--	--	na	2.0E+05
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Toxaphene ^C	0	7.3E-01	2.0E-04	na	7.5E-03	7.3E-01	2.0E-04	na	7.5E-03	--	--	--	--	--	--	--	--	7.3E-01	2.0E-04	na	7.5E-03
Tributyltin	0	4.6E-01	6.3E-02	na	--	4.6E-01	6.3E-02	na	--	--	--	--	--	--	--	--	--	4.6E-01	6.3E-02	na	--
1,2,4-Trichlorobenzene	0	--	--	na	9.4E+02	--	--	na	9.4E+02	--	--	--	--	--	--	--	--	--	--	na	9.4E+02
1,1,2-Trichloroethane ^C	0	--	--	na	4.2E+02	--	--	na	4.2E+02	--	--	--	--	--	--	--	--	--	--	na	4.2E+02
Trichloroethylene ^C	0	--	--	na	8.1E+02	--	--	na	8.1E+02	--	--	--	--	--	--	--	--	--	--	na	8.1E+02
2,4,6-Trichlorophenol ^C	0	--	--	na	6.5E+01	--	--	na	6.5E+01	--	--	--	--	--	--	--	--	--	--	na	6.5E+01
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Vinyl Chloride ^C	0	--	--	na	6.1E+01	--	--	na	6.1E+01	--	--	--	--	--	--	--	--	--	--	na	6.1E+01
Zinc	0	1.3E+02	1.4E+02	na	6.9E+04	1.3E+02	1.4E+02	na	6.9E+04	--	--	--	--	--	--	--	--	1.3E+02	1.4E+02	na	6.9E+04

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	4.3E+03
Arsenic	9.0E+01
Barium	na
Cadmium	7.8E-01
Chromium III	5.1E+01
Chromium VI	6.4E+00
Copper	6.2E+00
Iron	na
Lead	1.0E+01
Manganese	na
Mercury	5.1E-02
Nickel	1.4E+01
Selenium	3.0E+00
Silver	1.8E+00
Zinc	5.4E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

2/4/2008 9:52:32 AM

Facility = Aquia WWTP
Chemical = Total Residual Chlorine
Chronic averaging period = 4
WLAa = 19
WLAc = 11
Q.L. = 100
samples/mo. = 30
samples/wk. = 8

Summary of Statistics:

observations = 1
Expected Value = 200
Variance = 14400
C.V. = 0.6
97th percentile daily values = 486.683
97th percentile 4 day average = 332.758
97th percentile 30 day average = 241.210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 16.0883226245855
Average Weekly limit = 9.59676626920107
Average Monthly Limit = 7.9737131838758

The data are:

200

2/4/2008 9:51:09 AM

Facility = Aquia WWTP
Chemical = Zinc
Chronic averaging period = 4
WLAa = 130
WLAc = 140
Q.L. = 20
samples/mo. = 1
samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 25
Variance = 225
C.V. = 0.6
97th percentile daily values = 60.8354
97th percentile 4 day average = 41.5947
97th percentile 30 day average = 30.1513
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

Facility = Aquia WWTP (VA0060968)
Chemical = Ammonia as Nitrogen (NOV-MAI2)
Chronic averaging period = 30
WLAa = 13.6
WLAc = 2.07
Q.L. = 0.2
samples/mo. = 28
samples/wk. = 7

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average = 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 4.17657709337176
Average Weekly limit = 2.55066573047757
Average Monthly Limit = 2.08241280274032

The data are:

MEMORANDUM

TO: VA0060968 – Aquia WWTP Modification File

FROM: Alison Thompson

THROUGH: Tom Faha

DATE: January 31, 2007

SUBJECT: Summary of Water Quality Modeling for Aquia Creek

COPIES: U:/drive

In mid-2006 Stafford County Utilities applied for a modification of VPDES Permit VA0060968 Aquia WWTP. The facility has a current design capacity of 6.5 MGD with an upper flow tier of 8.0 MGD. With this modification request, Stafford County has asked for another expanded flow tiers of 10 and 12 MGD.

When the permit was reissued in 2003, it was staff's best professional judgment that the monthly average and weekly average Total Phosphorus (TP) loads be capped at 4.4 kg/day and 6.6 kg/day, respectively, when the facility expands to 8.0 MGD. The concentration for TP remained at 0.18 mg/l as specified in the Policy for the Potomac River Embayments (PPRE) 9 VAC 25-415-40. With the expansion to 8.0 MGD, staff stated that additional modeling will be necessary because of the increased phosphorus loadings. During the reissuance, in lieu of modeling, staff capped the phosphorus loading, since the endpoint by which the impacts from phosphorus loadings are measured, specifically, chlorophyll-a, was under evaluation in 2003.

Section 50 of the PPRE states that, "Water quality models may be required to predict the effect of wastewater discharges on the water quality of the receiving waterbody, the embayment, and the Potomac River. The purpose of the modeling shall be to determine if more stringent limits than those required in 9VAC25-415-40 are required to meet water quality standards." The updated model shall take into account previous water quality modeling.

The modeling done in the 1980s by VIMS used chlorophyll-a goals when analyzing the results of the different scenarios. Since then the State has adopted laws and regulations to protect the Chesapeake Bay and its tidal tributaries from the nutrient loads of STPs, and the current Virginia Water Quality Standards (with amendments dated January 12, 2006), include a narrative criterion for chlorophyll-a in 9 VAC 25-260-185C.

The modeling done by VIMS in 1985 found that the Aquia Creek system is Nitrogen limited. It also demonstrated that the water quality in the lower reaches of the embayment was influenced more by the Potomac River; the upper reaches of Aquia Creek, however, are predominantly influenced by the phosphorus loads of the WWTP discharge. The VIMS model looked at the Point Source Nitrogen and Phosphorus. In one run, all forms of nitrogen were eliminated, but this only influenced the nitrogen species distribution in a small stretch (7 km) of the creek. In another run, the phosphorus load was eliminated and the model found that, "...the elimination of point source phosphorus reduces the chlorophyll concentration in the upper reach of the creek." This study also found that "inorganic nitrogen inputs from the STP discharge and from the Potomac River play an important role in supporting the algal population in the creek," but the "influence of the STP discharge is mainly confined to the narrow section of the creek at the upstream end."

In 1987 the Northern Virginia Planning District Commission for the State Water Control Board performed wasteload allocation models and sensitivity analyses for the Potomac embayments, including Aquia Creek. The analysis looked at the Aquia WWTP at a design flow of 3 MGD and 3 TP effluent concentrations (0.18, 0.40, and

1.0 mg/L). The analysis showed that there was no marked increase when the concentration went from 0.18 to 0.40 mg/L. The analysis found that "for increasing TP loads the chlorophyll-a concentrations near and upstream of the WWTP discharge are increased which produce additional dissolved oxygen...A TP concentration of 1.0 mg/L, however, shows a substantial increase in the chlorophyll-a concentration in segment 6 upstream of the WWTP discharge location." Plots of the varying TP loads show that "the variable chlorophyll-a concentrations in the upstream segments are due to the changes in the effluent TP concentrations" (i.e., since the flow was held constant, the load increased with the higher concentrations).

Given the conclusions reached during the original modeling and since Stafford County has asked for an expansion that is four times larger than the volume originally modeled in the 1980s, it is staff's best professional judgment that the phosphorus monthly average and weekly average loads continue to be held at the 6.5 MGD levels or modeling shall be necessary to determine if there shall be any detrimental effects to the upper reaches of Aquia Creek from the increased loads from the WWTP. By capping the phosphorus loadings, in combination with the fact that Aquia must now meet a TN concentration of 3.0 mg/L, we believe the water quality standards of Aquia Creek will be met and no additional modeling will be required. Stafford County may wish to model should they believe less stringent limits would be protective of Aquia Creek.

CHRONIC TEST DATA REVIEW CHECKLIST

Revised October 13, 2004

Referencing:

Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition, EPA 821-R-02-013, October 2002 (Citations preceded by "F")

and

Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Marine and Estuarine Organisms, Third Edition, EPA 821-R-02-014, October 2002 (Citations preceded by "S")

Permit Number VA0060968 Outfall 001__ Permittee: Aquia WWTP – Stafford County

Test Start Date 06/18/07 Period Reviewed: QT__ SA__ AN X Other__
1st__ 2nd__ 3rd__ 4th__

Testing Laboratory J.R. Reed & Assoc.

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
1.	Was the test performed as per schedule?	X		Permit
2.	Was the correct test performed?	X		Permit
3.	Was the correct type of sample collected at each sampling event?	X		Permit
4.	Was a minimum of 3 samples collected?	X		F-8.3.2
5.	Were pH, temp, Cl of sample checked at sample site (or within 15 minutes of sample retrieval) for each sample?	X		DEQ guidance F-8.5.3
6.	If the samples were collected for off-site toxicity testing, were they held at 0-6° C during collection (composite) or chilled immediately following collection (grab)?	X		F-8.5.2 S-8.5.1
7.	Was each sample packed in ice and chilled to 0-6° C for transport? NOTE: Frozen samples are not valid! NOTE: An exception to this would be for samples that are delivered for same day testing that may not have a chance to cool to this temperature range.	X		F-8.5.7.1 S-8.5.7.1
8.	Were temperature and sample description recorded upon receipt of each sample?	X		S-8.6.1 DEQ guidance
9.	Does the description (visual, obvious scent) of each sample (when received at lab) seem typical for this type of facility?	X		DEQ guidance
10.	Was the test initiated within 36 hours of sample retrieval from sampler? NOTE: In isolated cases, an extension to this holding time can be allowed by DEQ (CO). Documentation of this permission must be presented with the test report and include the supportive data mentioned in 8.5.4 and 8.7.1	X		F-8.5.4 S-8.5.4
11.	Was the last use of the sample within 72 HOURS AFTER FIRST USE (sample age should not exceed 108 hours)?	X		F-8.5.4 S-8.5.4
12.	If filtration was necessary to remove debris or indigenous organisms, was a sieve with $\geq 60 \mu\text{m}$ mesh openings (or larger) used?	X		F-8.8.2 S-7.3.4
13.	a. Was the sample DO $\geq 4.0 \text{ mg/l}$ and \leq saturation at 25° C prior to test initiation? (applies to <i>C. dubia</i> and <i>P. promelas</i>) b. Was the sample DO $\geq 4.0 \text{ mg/l}$ and \leq saturation at 25° C and 20 g/kg salinity prior to test initiation? (applies to <i>C. variegatus</i>) c. Was the sample DO $\geq 4.0 \text{ mg/l}$ and \leq saturation at 26° C and 20 g/kg salinity prior to test initiation? (applied to <i>M. bahia</i>)		X	F-8.8.3 S-8.8.4

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
14.	If item 13. is "NO" for meeting the minimum DO levels for the organism used, was the DO adjusted to the acceptable range (see a., b., and c. above) prior to test initiation?	X		F-8.8.3
15.	If the DO of the sample was greater than saturation at the test temperature, was the sample aerated to reduce it prior to test initiation?	X		F-8.8.3
16.	If the sample had a chlorine residual, was it dechlorinated?	N/A		F-8.8.7 S-8.8.7
17.	Did the permit allow for dechlorination of the sample? (Only if it contains a compliance schedule for a chlorine limit or for dechlorination)	N/A		DEQ guidance
18.	If the sample was dechlorinated, were controls treated with the same amount of dechlorination agent and run with untreated controls? (This determines any adverse effect of the dechlorination agent.)	N/A		F-8.8.7 S-8.8.7
19.	Was each sample pH within the 6.0 - 9.0 range?	X		F-8.8.8 S-8.8.9
20.	If 19. is NO, and if the sample pH was adjusted, were parallel tests, one with an adjusted pH and one without an adjusted pH, run? <i>NOTE: DEQ prefers that the effluent is used "as is", with regard to pH due to the problems associated with multiple samples.</i>	N/A		F-8.8.8 S-8.8.9
21.	If the pH was adjusted, was it adjusted to pH 7.0 (Freshwater tests) or pH 8.0 (Saltwater tests) by adding 1N NaOH or 1N HCl?	N/A		F-8.8.8 S 8.8.9
22.	Was the age of the organisms in the correct range at test initiation? a. <i>P. promelas</i> and <i>C. variegatus</i> - <24 hours old preferred (0-48 hours old is acceptable if the organisms are all within 24 hours in age of each other) b. <i>C. dubia</i> - <24 hours old, within 8 hours of age of each other? c. <i>M. bahia</i> - 7 days old, within 24 hours of age of each other	X		F-Tbl 11-1 S-Tbl 11-3 S-11.10.2.2 F-Tbl 13-3 S-Tbl 13-3
23.	If the test organisms were obtained from an outside source, was a reference toxicant test run concurrently?	N/A		F-4.7.1 4.7.3 S-4.7.1
24.	If the concurrently run reference toxicant test should fail to meet acceptability criteria, was the reference toxicant test repeated?	N/A		F-4.7.4 S-4.7.4
25.	Was a minimum of 5 test concentrations and 1 control set up using concentrations appropriate for the limit or monitoring endpoint specified in the permit?	X		F-8.10. S-8.10
26.	Was the test chamber size acceptable? a. <i>P. promelas</i> - 500 ml minimum b. <i>C. variegatus</i> - 300-1000 ml c. <i>M. bahia</i> - 400 ml beaker or 8 oz cup (236 ml capacity) d. <i>C. dubia</i> - 30 ml minimum	X		F-Tbl 11-1 S-Tbl 11-3 F-Tbl 13-3 S-Tbl 13-3
27.	Was the sample volume acceptable? a. <i>P. promelas</i> - 250 ml minimum b. <i>C. variegatus</i> - 250-750 ml c. <i>M. bahia</i> - 150 ml d. <i>C. dubia</i> - 15 ml minimum	X		F-Tbl 11-1 S-Tbl 11-3 F-Tbl 13-3 S-Tbl 13-3

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
28.	Was the minimum number of replicates per concentration represented? a. 4 replicates - <i>P. promelas</i> , <i>C. variegatus</i> b. 8 replicates - <i>M. bahia</i> c. 10 replicates - <i>C. dubia</i>	X		F-Tbl 11-1 S-Tbl 11-3 F-Tbl 13-3 S-Tbl 13-3
29.	Was the minimum number of organisms in each replicate? a. 10 organisms - <i>P. promelas</i> , <i>C. variegatus</i> , b. 5 organisms - <i>M. bahia</i> c. 1 organism - <i>C. dubia</i>	X		F-Tbl 11-1 S-Tbl 11-3 F-Tbl 13-3 S-Tbl 13-3
30.	a. Was the dilution water synthetic moderately hard water or 20% DMW? (applies to freshwater species <i>P. promelas</i> , <i>C. dubia</i>) b. Was the dilution water synthetic sea water made with deionized water and sea salts adjusted to 20 ± 2 ppt, or the same salinity as the receiving water? (applies to salt water species, <i>C. variegatus</i> , <i>M. bahia</i>)	X		F-7.1.1.1 S-14.6.10.2 DEQ guidance
31.	Freshwater - Was the dilution water hardness within the approximate range of 80-100 mg CaCO ₃ /L?	X		F-Tables 3 & 4
32.	Freshwater - Was the dilution water alkalinity within the approximate range of 57- 64 mg CaCO ₃ /L?	X		F-Tables 3 & 4
33.	Freshwater - Was the dilution water pH within the approximate range of 7.4 – 7.8; or 7.9 – 8.3 or mineral water?	X		F-Tables 3 & 4
34.	a. The average test temperature for tests using <i>P. promelas</i> , <i>C. dubia</i> , or <i>C. variegatus</i> should be $25 \pm 1^\circ \text{C}$ upon initiation and throughout the test. Did the test temperatures deviate by more than 3°C (maximum minus minimum temperature) during the test? b. The average test temperature for tests using <i>M. bahia</i> should be $26 \pm 1^\circ \text{C}$ upon initiation and throughout the test. Did the test temperatures deviate by more than 3°C (maximum minus minimum temperature) during the test?	X		F-4.6.1 S-Table 3
35.	Was the temperature measured daily in one replicate of each concentration?	X		F-4.6.1 S-11.10.7.1.2
NOTE	If surrogate sample chambers were used for probe measurements, they MUST have contained the same number of organisms as the test chambers and have been subject to the same conditions as the test chambers; else, the data are not acceptable. This applies to pH, DO and conductivity readings.			
36.	Was the DO measured daily, at the beginning and end of each 24 hour period, in one replicate of each concentration?	X		F-4.6.1 S-13.10.6.1.1
37.	If the DO dropped to <4.0 mg/l in a test using <i>P. promelas</i> , <i>C. variegatus</i> , or <i>M. bahia</i> , was aeration initiated? (For a test using <i>C. dubia</i> , a low DO sample should be aerated prior to test initiation or renewal, as aeration with the organisms present is impractical.)	N/A		F-8.8.4. S-11.10.4.1
38.	If aeration was necessary (and acceptable), were all test chambers aerated for the duration of the test, and the time at which aeration was initiated recorded? (Not applicable to tests using <i>C. dubia</i>)	N/A		F-8.8.4.2 S-11.10.4.1
39.	If aeration was necessary (and acceptable), was it applied at a maximum rate of 100 bubbles/minute so as not to cause injury to the organisms?	N/A		F-8.8.4.2 S-11.10.4.1

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
40.	Was pH measured at test initiation and at the end of each 24-hour period in one replicate of each concentration?	X		F-8.8.5 S-11.10.7.1.2
41.	Was the pH measured in the effluent sample each day before new test solutions are made?	X		F-8.8.6 S-11.10.7.1.3
42.	If toxicity may be caused by un-ionized ammonia (or where the ammonia is ≥ 5.0 mg/l), was total ammonia measured?	X		F-8.8.6
43.	a. For a freshwater test, was conductivity measured at the beginning of each 24-hour period in the 100% sample and the control? (applies to freshwater species <i>P. promelas</i> , <i>C. dubia</i>) NOTE: It is recommended that conductivity is measured in one replicate of each dilution at the beginning of each 24-hour period. b. For a saltwater test, was the salinity measured at the end of each 24-hour period in one replicate of each concentration? (applies to salt water species, <i>C. variegatus</i> , <i>M. bahia</i>)	X		F-8.8.5 DEQ guidance S-11.10.7.1.2
44.	For both freshwater and saltwater tests, was the alkalinity measured in 100% effluent and the control at test initiation, and for each new sample? (For saltwater tests, the effluent alkalinity should be measured prior to adjustment with salts.)	X		F-8.8.5.1 S-8.8.5.1
45.	For both freshwater and saltwater tests, was the hardness measured in 100% effluent and the control at test initiation, and for each new sample? (For saltwater tests, the effluent hardness should be measured prior to adjustment with salts.)	X		F-8.8.5.1 S-8.8.5.1
46.	a. For a test using <i>Mysidopsis bahia</i> , were the mysids fed <i>Artemia</i> nauplii (at a rate of 75/mysid) twice daily? b. For a test using <i>Pimephales promelas</i> , were the larvae fed 0.15 ml concentrated <i>Artemia</i> nauplii a minimum of twice daily? c. For a test using <i>Cyprinodon variegatus</i> , were the larvae fed <i>Artemia</i> nauplii once per day at a rate of 0.1 g (wet weight) for days 0-2, and 0.15 g (wet weight) for days 3-6? d. For a test using <i>Ceriodaphnia dubia</i> , were the organisms fed 0.1 ml YCT and 0.1 ml algae per day after renewal?	X		F-11.10.5.1 S-11.10.5 F-13.10.5.1
47.	Was the sample data for the renewal days consistent with the data for the first use of that sample?	X		DEQ guidance
48.	Was the daily photoperiod 16 hours light/8 hours dark?	X		F-13.10.3.1 S-11.10.3
49.	Were the surviving organisms counted daily in all test chambers?	X		F-11.10.6.2.1 S-11.10.7.2.1
50.	Were the number of young produced recorded daily for the <i>C. dubia</i> test?	X		F-13.10.6.2.3
51.	Was the occurrence of males present noted in the <i>C. dubia</i> test? (Tests with no males noted may be indicative of no males present)	X		F-13.10.9.3
52.	Were individual treatments with males (1 or 2 replicates) and blocked rows containing $\geq 50\%$ males (3 replicates or more) excluded from data analysis for the reproduction endpoint? (The males are used for survival analysis)	X		F-13.13.1.4
53.	Were the daily renewals of chronic test solutions performed no earlier or later than subsequent 24 ± 2 hour periods from test initiation?	X		DEQ guidance

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
54.	<p>a. For tests using <i>P. promelas</i>, <i>C. variegatus</i>, or <i>M. bahia</i>, was the test terminated 7 days (this is interpreted as 7 24-hour periods) and within ± 1 hour of the time of day at which it was initiated?</p> <p>b. For tests using <i>C. dubia</i>, was the test terminated when 60% or more of the surviving females in the controls had produced their third brood within 8 days?</p>	X		F-Table 1 and DEQ guidance
		X		S-11.10.9.1 F-13.10.9.1
55.	Was the percent survival in each concentration recorded at the end of the test?	X		DEQ guidance
56.	Was the percent survival in the controls $\geq 80\%$?	X		F-13.12.1 F-11.12.1 S-11.12.1 S-14.12.1
57.	<p>Did the test meet the additional acceptability criteria?</p> <p>a. <i>P. promelas</i> - For tests initiated with larvae ≤ 24 hours old, was the average dry weight of the control larvae surviving at the end of the test ≥ 0.25 mg?</p> <p>b. <i>C. variegatus</i> - For tests initiated with larvae ≤ 24 hours old, was the average dry weight of control larvae ≥ 0.60 mg (unpreserved), or ≥ 0.50 mg (preserved)?</p> <p>c. <i>M. bahia</i> - Was the average weight of the controls ≥ 0.20 mg?</p> <p>d. <i>C. dubia</i> - Did reproduction in the controls average 15 or more young per surviving female? NOTE: Fourth brood neonates should not be counted. In addition to these test acceptability criteria, if fewer than eight replicates in the control remain after excluding males and blocks with 50% or more surviving organisms identified as males, the test is invalid and must be repeated with newly collected samples.</p>	X		F-11.12.1 S-11.12.1 S-14.12.1 F-13.2.1 13.13.1.4
58.	Were the data Arcsin transformed prior to statistical analysis (<i>M. bahia</i> , <i>C. variegatus</i> , <i>P. promelas</i> – survival)?	X		S-Figure 5
59.	Was the NOEC correctly determined using the appropriate statistical method?	X		F-9.1
60.	<p>Was the PMSD for the sublethal endpoint within upper bounds? (applicable for tests performed after 12/1/02)</p> <p>a. <i>P. promelas</i> growth - 30%</p> <p>b. <i>C. dubia</i> reproduction - 47%</p> <p>c. <i>M. bahia</i> growth - 37%</p> <p>If the PMSD was greater than the criterion but significant reduction identified at the IWC then the test is acceptable (A bold item?)</p>	X		F,S-10.2.8
61.	If the PMSD exceeded the upper bound and no significant reduction was identified at the IWC, was the test repeated?	N/A		F,S-10.2.8.2.4.2
62.	Did the test result in a calculable NOEC (Result reported as "<" is not acceptable. Lower dilutions should have been added or the test rerun to determine the result.)	X		DEQ guidance
63.	Was the IC ₂₅ reported for the test?	X		F-9.1
64.	Was the LC ₅₀ at 48 hours reported for the test?	X		DEQ guidance

Items in bold type (and shaded) are significant in that if they are answered "NO", the test is automatically invalidated and must be repeated to fulfill permit TMP requirements. Bold type items are numbers 2, 3, 4, 7, 10, 11, 14, 22, 23, 25, 34, 35, 52, 54, 56, 57, 60 and 61.

RESPONSE GUIDE

1. Yes	21. Yes; NA	41. Yes
2. Yes	22. Yes	42. Yes; NA
3. Yes	23. Yes; NA	43. Yes
4. Yes	24. Yes; NA	44. Yes
5. Yes, preferably	25. Yes	45. Yes
6. Yes	26. Yes	46. Yes
7. Yes	27. Yes	47. Yes
8. Yes, preferably	28. Yes	48. Yes
9. Yes, preferably; NA	29. Yes	49. Yes
10. Yes, unless granted variance	30. Yes	50. Yes
11. Yes, unless granted variance	31. Yes	51. Yes; NA
12. Yes, or NA	32. Yes	52. Yes
13. Yes	33. Yes	53. Yes, preferably
14. If 13. is "No", then Yes; NA	34. No	54. Yes
15. Yes; No; NA	35. Yes	55. Yes
16. Yes; No; NA	36. Yes	56. Yes
17. If 16. is "Yes", then Yes	37. Yes; NA	57. Yes
18. If 16. is "Yes", then Yes	38. If 37. is "Yes", then Yes; NA	58. Yes
19. Yes; No	39. If 37. is "Yes", then Yes; NA	59. Yes
20. Yes; NA	40. Yes	60. Yes
		61. Yes
		62-64. Yes

RESULTS

ACCEPTABLE	NOT ACCEPTABLE
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COMMENTS: The results for both species yielded a NOEC of 100% which is equal to a TUC of 1.0 The discharge did not exhibit any toxicity.

Reviewed By: Jim Olson – 08/14/07

LaFratta,James

From: LaFratta,James
Sent: Thursday, February 07, 2008 1:37 PM
To: DALuzier@laneconstruct.com
Cc: 'CDMonahan@laneconstruct.com'
Subject: Consent Order - RAP Processing Equipment

Dear Mr. Luzier,

Attached please find an electronic copy of the Consent Order for your RAP Processing Equipment (formerly associated with Air Registration No. 40793, but now permitted with Registration No. 41066). The Consent Order became effective on January 30, 2008, and please accept my apologies to getting this back to you this late (I was at training thru Wed of this week). If you need any extra time with the Appendix A timeframes because of this, just let me know and we should be able to work them out. I'm also sending one of the original signed hard copies to you via USPS. If you have any questions, please let me know. Thanks for all your help in getting this taken care of.

James B. LaFratta
Air Compliance & Enforcement
Fredericksburg Satellite Office
Virginia Department of Environmental Quality
806 Westwood Office Park
Fredericksburg, Virginia 22401

(540)899-4507 (phone)
(540)899-4647 (fax)

jblafratta@deq.virginia.gov (email)

Citizens may comment on the proposed reissuance of a permit that allows the release of treated wastewater into a water body in Stafford County, Virginia

PUBLIC COMMENT PERIOD: XX, 2008 to 5:00 p.m. on XXX, 2008

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater

Owners or operators of municipal facilities that discharge or propose to discharge wastewater into the streams, rivers or bays of Virginia from a point source must apply for this permit. In general, point sources are fixed sources of pollution such as pipes, ditches or channels. The applicant must submit the application to the Department of Environmental Quality, under the authority of the State Water Control Board.

PURPOSE OF NOTICE: To invite the public to comment on the draft permit reissuance.

NAME, ADDRESS AND PERMIT NUMBER OF APPLICANT: Stafford County Board of Supervisors
1300 Courthouse Road, Stafford, VA 22555-0339
VA0060968

NAME AND ADDRESS OF FACILITY: Aquia Wastewater Treatment Plant
75 Coal Landing Rd., Stafford, VA 22554

Project description: Stafford County has applied for a reissuance of a permit for Aquia WWTP in Stafford County, Virginia. The applicant proposes to release treated sewage at a rate of 6.5 Million Gallons Per Day with additional flow tiers of 8.0, 10, and 12 MGD into the Austin Run, UT in Stafford County that is in the Potomac River watershed. A watershed is the land area drained by a river and its incoming streams. The sludge will be transported to the Rappahannock Regional Solid Waste Landfill where it is used for cover or it can also be trucked to the sludge facility at the County's Little Falls Run Wastewater Treatment Facility (VA0076392) where it is stored prior to land application. At all flow tiers, the permit will limit the following pollutants to amounts that protect water quality: Flow, Carbonaceous Biochemical Oxygen Demand, Total Suspended Solids, Ammonia as N, Total Phosphorus, pH, Dissolved Oxygen, *E. coli*, Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Total Nitrogen.

This facility is subject to the requirements of 9 VAC 25-820 and has registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

How a decision is made: After public comments have been considered and addressed by the permit or other means, DEQ will make the final decision unless there is a public hearing. DEQ may hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the proposed permit. If there is a public hearing, the State Water Control Board will make the final decision.

HOW TO COMMENT: DEQ accepts comments by e-mail, fax or postal mail. All comments must be in writing and be received by DEQ during the comment period. The public also may request a public hearing.

WRITTEN COMMENTS MUST INCLUDE:

1. The names, mailing addresses and telephone numbers of the person commenting and of all people represented by the citizen.
2. If a public hearing is requested, the reason for holding a hearing, including associated concerns.
3. A brief, informal statement regarding the extent of the interest of the person commenting, including how the operation of the facility or activity affects the citizen.

TO REVIEW THE DRAFT PERMIT AND APPLICATION: The public may review the documents at the DEQ-Northern Virginia Regional Office every work day by appointment.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION:

Name: Alison Thompson

Address: DEQ-Northern Virginia Regional Office, 13901 Crown Court, Woodbridge, VA 22193

Phone: (703) 583-3834 E-mail: althompson@deq.virginia.gov Fax: (703) 583-3841

**State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review**

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	Aquia WWTP
NPDES Permit Number:	VA0060968
Permit Writer Name:	Alison Thompson
Date:	February 7, 2008

Major [X]

Minor []

Industrial []

Municipal [X]

I.A. Draft Permit Package Submittal Includes:

	Yes	No	N/A
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?	X		
8. Whole Effluent Toxicity Test summary and analysis?	X		
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics

	Yes	No	N/A
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet or permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?			X
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?	X		
a. Has a TMDL been developed and approved by EPA for the impaired water? PCBs	X		
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?	X		
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?	X		
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?		X	

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?	X		
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?	X		
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs (To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration

	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements

	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?	X		

II.C. Technology-Based Effluent Limits (POTWs)

	Yes	No	N/A
1. Does the permit contain numeric limits for <u>ALL</u> of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits

	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?			X
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a “reasonable potential” evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the “reasonable potential” evaluation was performed in accordance with the State’s approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have “reasonable potential”?	X		
d. Does the fact sheet indicate that the “reasonable potential” and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?	X		
e. Does the permit contain numeric effluent limits for all pollutants for which “reasonable potential” was determined?	X		

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an “antidegradation” review was performed in accordance with the State’s approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?	X		

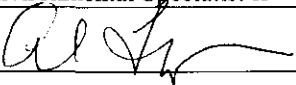
II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	X		
2. Does the permit include appropriate storm water program requirements?			X

II.F. Special Conditions – cont.	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		X	
a. Does the permit require implementation of the “Nine Minimum Controls”?			X
b. Does the permit require development and implementation of a “Long Term Control Plan”?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?	X		

II.G. Standard Conditions	Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		
List of Standard Conditions – 40 CFR 122.41			
Duty to comply	Property rights	Reporting Requirements	
Duty to reapply	Duty to provide information	Planned change	
Need to halt or reduce activity	Inspections and entry	Anticipated noncompliance	
not a defense	Monitoring and records	Transfers	
Duty to mitigate	Signatory requirement	Monitoring reports	
Proper O & M	Bypass	Compliance schedules	
Permit actions	Upset	24-Hour reporting	
		Other non-compliance	
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?	X		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	<u>Alison Thompson</u>
Title	<u>Environmental Specialist II</u>
Signature	<u></u>
Date	<u>February 7, 2008</u>